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AND NATURALIZED GRASSES BY THEIR
VEGETATIVE CHARACTERS

By

S. E. CLARKE, J. A. CAMPBELL

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EXPERIMENTAL FARMS SERVICE

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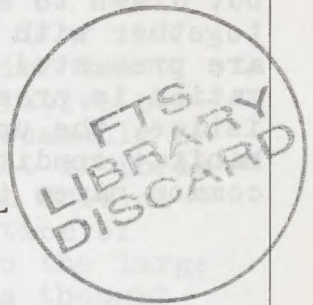
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Abstract

This bulletin presents a key for the identification of one hundred and two native and naturalized grasses occurring in pastures and meadows in the Prairie Provinces. Characters of the vegetative parts such as sheath, collar, auricles, ligule and leaf-blade are used for their separation. Diagrammatic drawings, not made to scale, but drawn to emphasize structural characteristics, together with detailed descriptions of these parts are presented for each species. Certain information is presented concerning growth characteristics, the underground portions of the plant and habitat conditions. An index to botanical and common names is given.

Introduction

In recent years there has developed an increasing appreciation of the value of native pastures and hay meadows, as the basis of the livestock industry in Western Canada. The millions of acres of native grassland used as pasturage in the four western provinces constitute a great natural resource, the utilization of which is a matter of national concern. The return of several million acres of abandoned farm lands to grass and the development of numerous community pastures under the Prairie Farm Rehabilitation Act, has done much to stimulate a greater interest in native pastures.

The proper utilization of these pastures requires considerable study concerning the various species that make up the vegetative cover. The identification of the different species, together with information concerning their prevalence, dis-

tribution, seasonal growth, productivity and forage value is essential in evaluating pastures and in determining their grazing capacity, as well as in other problems dealing with pasture management and proper land use.

In the determination of the botanical composition of grasslands, it is often necessary to identify plants that are in the pre-flowering stage or in a closely grazed condition, and, therefore, without inflorescence. In such cases identification must be based on the vegetative characters of the basal and root portions of the plant.

This publication contains a brief description and sketch of certain vegetative portions of each of 102 grass species commonly found in the prairie provinces. Most of these are important forage grasses also in British Columbia. A key for the identification of these species is included. Owing to the large number of species dealt with, it was thought advisable to group certain species on the basis of some of the most important morphological characters as a means of simplifying separation.

The key has been tested extensively in the field and found to be workable. The descriptions presented in this publication should prove of definite value to all those interested in a study of the various grass species. It is suggested that a hand lens of 8 to 12 magnifications be used in studying the vegetative characters.

The nomenclature in this publication is in accordance with that used by A.S. Hitchcock in his "Manual of the Grasses of the United States," U.S.D.A. Misc. Pub. No. 200, 1935.

DISTINGUISHING GRASS SPECIES FROM OTHER GRASS-LIKE FORMS

The grasses belong to the Gramineae family and are readily distinguished from most other forms. However, there are a number of plants occurring in pastures and meadows which might be confused with the true grasses. These belong chiefly to two groups, the Sedge Family (Cyperaceae) and the Rush Family (Juncaceae). The Cyperaceae includes several genera of which *Carex*, *Scirpus* and *Eleocharis* are the most prevalent. The Juncaceae is represented chiefly by the genus *Juncus*.

These grass-like plants may be found growing in association with the true grasses in a wide range of habitats, from dry prairie to wet meadows. Since the key presented in this publication deals only with the grasses, it is necessary to differentiate between the true grasses and other grass-like species.

The following table may be used to assist in the recognition and separation of these forms.

SEPARATION OF THE TRUE GRASSES FROM OTHER GRASS-LIKE PLANTS

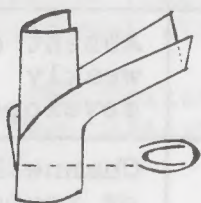
Character	Gramineae	Cyperaceae	Juncaceae
Culm	Usually hollow, cylindrical or flattened	Filled with pith, rarely hollow, usually 3-sided	Filled with sponge-like pith, cylindrical
Nodes	Conspicuous	Indistinct	Indistinct
Leaf arrangement	Two-ranked	Three-ranked	Three-ranked
Leaf sheath	Usually split, often closed	Usually closed	Open or closed
Collar	Distinct	Indistinct	Indistinct
Auricles	Present or absent	Absent	Absent
Ligule	Present, rarely absent	Absent or weakly developed	Absent or weakly developed
Leaf blade	Usually flat, often folded, involute or bristle-like; glabrous or pubescent	Flat, plicate, or bristle-like; rarely pubescent	Channelled or round; usually glabrous
Leaf margins	Smooth, scabrous or ciliate	Usually scabrous	Smooth

CHARACTERS USED IN IDENTIFICATION

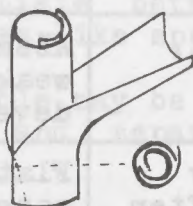
The descriptions in this publication are based on the vegetative characters of the lower leaves and shoots and not of the leaves found higher on the culms. The following six characters are considered to be the most reliable for the identification of species although individual characters may show considerable variation. Such variability as well as changes brought about by shrinkage or distortion in dried or old material should be taken into account in the interpretation of the key.

1. Bud-shoot

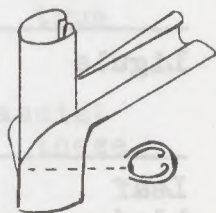
The arrangement of leaves in a bud-shoot may be folded or rolled as shown below. The former is usually found in flattened or laterally compressed



Folded
Conduplicate



Rolled
Convolute



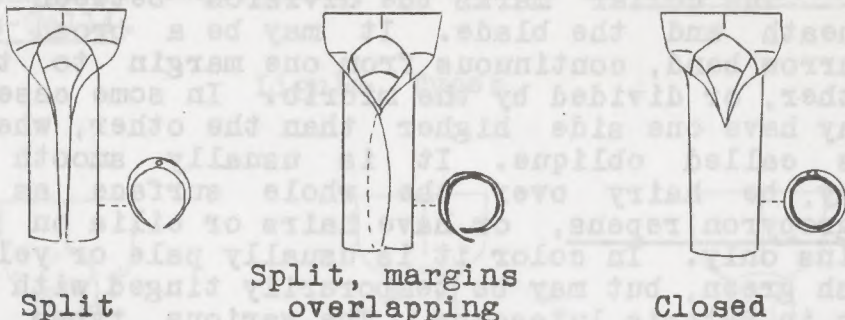
Rolled inwardly
Involute

shoots; the latter as a rule in cylindrical ones. However, exceptions do exist. In Setaria lutescens and Echinochloa Crus-Galli the leaves are rolled in flattened shoots, while in Danthonia spicata, Koeleria cristata and certain Fescues the folded leaves are in round shoots. In Calamagrostis montanensis and Puccinellia Nuttalliana the leaves are involute (rolled inwardly) in somewhat rounded shoots.

The character of a bud-shoot is best determined by cutting the shoot across below the ligule, examining the finer shoots with the aid of a strong magnifying glass.

2. Sheath

The sheath or the tubular basal portion of the leaf which envelopes the stem or the young leaves, may be round or compressed, and occasionally keeled at the midrib. In color it is usually of a paler shade of green than the blade, but often it is tinted with pink or purple at the base. These tints are not constant enough in most grasses, except in Alopecurus pratensis, to be of great value in identification. As shown below,



sheaths may be just split, split with overlapping margins, or closed. Ruptured closed sheaths must be distinguished from naturally split ones.

3. Auricles

These are appendages which project from the collar, one from each side. They are commonly found on species of Agropyron, Elymus, Hordeum, and Lolium. The various types are shown on the following page.



Claw-like



Rounded



Rudimentary



Absent

In old or dry material care must be exercised in examining the specimens for the presence of auricles which could easily be broken off.

4. Collar

The collar marks the division between the sheath and the blade. It may be a broad or narrow band, continuous from one margin to the other, or divided by the midrib. In some cases it may have one side higher than the other, when it is called oblique. It is usually smooth but may, be hairy over the whole surface as in Agropyron repens, or have hairs or cilia on margins only. In color it is usually pale or yellowish green, but may be temporarily tinged with red as in Setaria lutescens. The various types are shown below.



Broad



Narrow



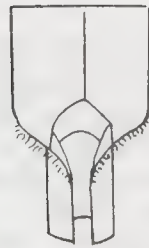
Divided



Oblique



Pubescent

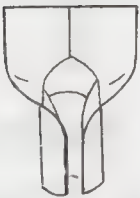


Ciliate

5. Ligule

This is a tissue clasping the stem or bud-shoot inside the leaf at the junction of blade and sheath. As shown below, it may be simply a fringe of hairs or membranous, or absent in Echinochloa Crus-Galli.

Ligule Types



Membranous



Fringe of hairs



Absent

The texture and color varies from thin and white as in Poa Canbyi to thick and opaque as in Bromus ciliatus. In length ligules may vary within a species but in shape and character of margins they are usually quite constant. Large ligules and those in old or dry material may be so frayed and broken up as to be useless for identification purposes.

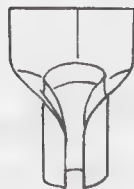
Ligule Shapes



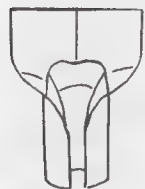
Acute



Obtuse

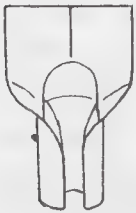


Truncate



Emarginate

Ligule Margins



Entire



Notched



Lacerate



Ciliate

The outer surface of the ligule is usually smooth, but may be pubescent as in Phalaris arundinacea and some species of Agrostis.



Ligule pubescent on the back

6. Blade

The blade is the upper portion of the leaf above the collar and ligule. It is usually flat when fresh but in drying may be folded or rolled. Bristle-like leaves are always tightly folded. The surfaces may be smooth, rough, or hairy; the margins smooth, glabrous, or ciliate. Veins may be so prominent on the upper surface as to form ridges. On the lower surface the midvein or midrib may be prominent enough to form a keel. The various forms in cross-section are shown below.



Flat

Keeled below



V-shaped



Folded



Bristle-like

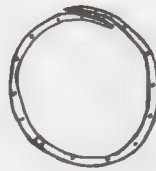


Flat

Ridged above



U-shaped



Convolute



Involute

Blade Tips

Sharp-pointed



Boat-shaped



Blades



Tapering

Linear (parallel-sided)

Blades



Constricted at the base

Twisted

IDENTIFICATION OF GRASSES BY THEIR VEGETATIVE CHARACTERS

- A. Perennials.
- B. Leaves folded in bud-shoot.
- C. Ligule a fringe of hairs. Group I Page 15
- C.C. Ligule membranous. Group II Page 15
- B.B. Leaves rolled in bud-shoot.
- C. Auricles present. Group III Page 17
- C.C. Auricles absent.
- D. Ligule a fringe of hairs.
- E. Tufted plants with very short root stocks.
- F. Sheath compressed. Sporobolus heterolepis Page 118
- F.F. Sheath round.
- G. Sheath margins and collar pubescent; open sandy soil. Sporobolus cryptandrus Page 117
- G.G. Sheath margins glabrous.
- H. Leaves 1-2 mm. wide, flat or when dry involute, usually glabrous; forming large patches. Bouteloua gracilis Page 42
- H.H. Leaves broader, papillose-hispid. Bouteloua curtipendula Page 41
- E.E. Plants with long creeping root stocks.
- F. Tufts of long hairs on inside of collar margins; sandy soils. Calamovilfa longifolia Page 55
- F.F. Tufts of hairs on collar margins absent.
- G. Blade densely pubescent on upper surface at base. Panicum virgatum Page 92
- G.G. Blade scabrous on upper surface at base, under surface very smooth; basal sheaths cross-veined.
- H. On moist alkaline soils; ligule 1 to 2 mm. long. Spartina gracilis Page 114
- H.H. On wet or moist soils, stouter than above; ligule 1 to 4 mm. long. Spartina pectinata Page 115
- D.D. Ligule membranous.
- E. Sheaths closed or nearly so. Group IV page 18
- E.E. Sheaths split.

- F. Plants tufted without creeping rootstocks. Group V Page 19
- F.F. Plants with creeping root stocks. Group VI Page 20
- A.A. Annuals.
- B. Leaves folded in bud-shoot.
- C. Ligule membranous, truncate, lacerate, ciliate; leaves bristle-like, less than 2 mm. wide. Festuca octoflora Page 74
- B.B. Leaves rolled in bud-shoot.
- C. Ligule absent; leaves broad. Echinochloa Crus-Galli Page 66
- C.C. Ligule a fringe of hairs.
- D. Sheath distinctly compressed and keeled. Setaria lutescens Page 110
- D.D. Sheath round.
- E. Sheath often slightly compressed, glabrous or sparsely appressed-pubescent, outer margin very hairy. Setaria viridis Page 111
- E.E. Sheath very hairy (Papillose-hispid), margins hyaline, overlapping, glabrous, prominently veined. Panicum capillare Page 91
- C.C.C. Ligule membranous.
- D. Sheaths open.
- E. Plants of gardens and waste places, sheaths scabrous, prominently veined; ligule up to 8 mm. long. Phalaris canariensis Page 94
- E.E. Erect, bluish-green plants of grain fields; auricles often absent; sheaths keeled, prominently veined and glabrous. Lolium rigidum Page 84
- E.E.E. Densely tufted plants of wet places; sheaths and leaf blades distinctly cross-veined; ligule 4-10 mm. long. Beckmannia Syzigachne Page 40
- D.D. Sheaths closed.
- E. Waste places; blades 2 to 4 mm. wide; ligule about 1 mm. long, coarsely lacerate, teeth fringed with silky hairs, 1 to 2 mm. long. Bromus japonicus Page 47
- E.E. Open ground, open woods and waste places; blades 3 to 8 mm. wide; ligule longitudinally corrugate, lacerate 1 to 2 mm. long. Bromus carinatus Page 44
- E.E.E. Roadsides, banks and waste places; blades 4 to 8 mm. wide; pubescent on both surfaces and margins; ligule 1 to 3 mm. long. Bromus tectorum Page 49

Group 1.

- A. Plants with strong, extensive, scaly rootstocks and stiff, sharp-pointed new shoots, on strongly alkaline soils only.
Distichlis stricta Page 65
- A.A. Tufted grasses of meadows, moist slopes or open woods.
- B. Collar a narrow, continuous ridge at which the lower blades break off readily from the glabrous sheaths; Alberta Foothills.
Danthonia Parryi Page 61
- B.B. Plants low; collar broad, yellowish, flared up the blade; sheath and blades usually pilose.
Danthonia unispicata Page 63
- B.B.B. Collar medium broad, often indistinct.
- C. Sheaths glabrous, pilose at throat.
Danthonia californica var. americana Page 59
- C.C. Sheaths, lower ones at least pilose pubescent.
- D. Leaves narrow, tapering to a sharp point, usually sparsely pilose, often glabrous, curled or flexuous; on poor or sandy soils.
Danthonia spicata Page 62
- D.D. Leaves broader, straight, flat to involute, long-pubescent on lower surface; meadows and hillsides.
Danthonia intermedia Page 60

Group 11.

- A. Plants densely tufted.
- B. Dry prairies and plains.
- C. Blades less than 5 cm. long, twisted, wavy and folded.
Schedonnardus paniculatus Page 108
- C.C. Plants green or glaucous, often purplish; blades about 12 cm. long, not wavy, mostly glabrous, prominent midrib white.
Andropogon scoparius Page 37
- C.C.C. Plants blue-green; blades 5 to 12 cm. long; upper surface often pubescent when young, distinctly ridged, midrib indistinct.
Koeleria cristata Page 83
- D. Collar a distinct yellowish band; ligule 1 to 3 mm. long; common on eroded slopes.
Muhlenbergia cuspidata Page 86
- D.D. Plants light green; collar usually indistinct and divided.
- E. Blades usually less than 12 cm. long; ligule acute 1 to 3 mm. long.
Poa secunda Page 106
- E.E. Blades usually less than 15 cm. long; ligule truncate, about 1 mm. long.
Poa Cusickii Page 101
- E.E.E. Blades usually less than 20 cm. long; ligule entire, acute, often lacerate, 2 to 5 mm. long.
Poa Canbyi Page 99

B.B. Moist soils.

C. Blades bristle-like or filiform.

D. Blades 5 to 15 cm. long, bluish green, glaucous; often on poor or sandy soils. Festuca ovina Page 75

D.D. Blades 5 to 25 cm. long; north slopes of Cypress Hills and Alberta Foothills. Festuca idahoensis Page 73

D.D.D. Blades more than 20 cm. long; widely distributed. Festuca scabrella Page 76

D.D.D.D. Blades light green, 2 mm. wide, distinctly veined; sheaths prominently veined, scabrous with scarious margins. Poa scabrella Page 105

J.C. Leaves broader.

D. Leaves 1 to 4 mm. wide; ligule entire, acute, often lacerate, 2 to 5 mm. long. Poa Canbyi Page 99

D.D. Leaves firm, 2 to 5 mm. wide, bluntly boat-shaped, tipped, midrib white. Avena Hookeri Page 39

D.D.D. Leaves tapering, 2 to 10 mm. wide, pale green, often glaucous with deep furrow over a prominent and scabrous midrib; ligule ciliolate. Dactylis glomerata Page 58

B.B.B. Wet soils or soils moister than above.

C. Sheaths glabrous with broad hyaline margins; ligule 4 to 10 mm. long, very conspicuous. Deschampsia caespitosa Page 64

A.A. Plants with creeping rootstocks or creeping bases.

B. Plants with creeping rootstocks.

C. Plants of moist soils; sheaths split.

D. Leaves up to 5 cm. long, plants small.

E. Ligule not more than 1 mm. long, truncate, lacerate. Muhlenbergia asperifolia Page 35

E.E. Ligule acute, 1 to 3 mm. long. Muhlenbergia squarrosa Page 88

D.D. Leaves more than 10 cm. long, plants taller than above.

E. Sheaths strongly flattened and sharply keeled; blades smooth beneath scabrous above. Poa compressa Page 100

E.E. Sheaths slightly flattened or round.

F. Plants with stout, scaly rootstocks; moist meadows and sandhills. Muhlenbergia racemosa Page 87

F.F. Plants with smooth rootstocks.

G. Ligule truncate, entire, less than 1 mm. long. Poa pratensis Page 104

G.G. Ligule acute 1 to 3 mm. Poa arida Page 98
Poa glaucifolia Page 102
Poa palustris Page 103

C.C. Plants of shallow water or wet soil.

- D. Sheaths in new leaves closed or partly closed.
- E. Plants stout with markedly striate and cross-veined sheaths and leaves; ligule 2 to 5 mm. long, obtuse or acuminate. Glyceria grandis Page 79
- E.E. Plants less stout, cross-veining on sheaths and leaves less marked.
- F. Ligule very long, up to 12 mm. acute. Glyceria borealis Page 78
- F.F. Ligule shorter, 2 to 5 mm. long, obtuse or acute; plants pale green. Glyceria striata Page 80
- B.B. Plants with creeping bases.
- C. Plants of shallow water or wet soils.
- D. Sheaths in new leaves split.
- E. Blades flat, soft, less than 10 cm. long; ligule conspicuous, obtuse 3 to 8 mm. long; sheaths and leaves faintly cross-veined; usually found around springs and along streams. Catabrosa aquatica Page 56

Group 111.

- A. Plants with creeping rootstocks.
- B. Introduced, found in cultivated fields and waste places; rootstocks whitish, with very sharp tips; leaves rich green; collar puberulent. Agropyron repens Page 27
- B.B. Native
- C. Dry prairie and flats, leaves usually narrower than 5 mm.
- D. Leaves stiff, greyish blue-green, prominently ridged. Agropyron Smithii Page 28
- D.D. Fine-leaved, light green, blades usually 2 mm. wide. Agropyron albicans Page 22
- D.D.D. Broader leaved, light green, blades usually more than 2 mm. wide. Agropyron dasystachyum Page 25
- C.C. Open woods, river banks and sandy soil; leaves 5 mm. wide or more.
- D. Ligule obtuse 2 to 7 mm. long; plant very tall, forming large tufts, round along ditches and gullies and in sandy soil. Elymus condensatus Page 68
- D.D. Ligule truncate less than 1 mm. long.
- E. Collar yellowish and broad; blades 3 to 20 mm. wide. Elymus canadensis Page 67
- E.E. Collar light green, divided or indistinct; blades 2 to 8 mm. wide; open woods and gravelly places. Elymus innovatus Page 70

A.A. Plants tufted without long creeping root stocks.		
B. Blades flat 5 to 15 mm. wide; moist open woods.	<u>Elymus glaucus</u>	Page 69
B.B. Blades usually involute. 1 to 2 mm. wide, plains and dry slopes.		
C. Densely tufted, plants of plains and dry slopes of hills and river valleys; blades pubescent above, glabrous beneath.	<u>Agropyron spicatum</u>	Page 29
C.C. Loosely tufted; open slopes at upper altitudes.	<u>Agropyron Bakeri</u>	Page 23
B.B.B. Blades usually flat between 2 to 10 mm. wide.		
C. Leaves rather stiffly ascending, 1 to 3 mm. wide, both surfaces and sheaths puberulent.	<u>Sitanion Hystrix</u>	Page 112
C.C. Sheaths glabrous.		
D. Cultivated species, distinctly bunch-forming; leaves light-bluish green.	<u>Agropyron cristatum</u>	Page 24
D.D. Native species of open woods, roadsides and draws.		
E. Densely tufted; blades 2 to 5 mm. wide, rather firm; ligule up to 1 mm. truncate, ciliolate; upper sheaths glabrous rarely pubescent.	<u>Elymus Macounii</u>	Page 71
E.E. Medium tufted; blades 3 to 8 mm. wide, margins white; primary basal sheath sometimes retrorsely pubescent.	<u>Agropyron subsecundum</u>	Page 30
E.E.E. Very loosely tufted; leaves 4 to 12 mm. wide; ligule thick, wavy ciliolate.	<u>Elymus virginicus</u>	Page 72

Group 1V.

A. Perennials; adapted to moist soils.		
B. Sheaths not pilose - pubescent.		
C. Native, on hillsides and meadows; ligule brown, truncate, lacerate, 1 to 3 mm. long.	<u>Bromus Pumpellianus</u>	Page 48
C.C. Introduced, cultivated fields, roadsides.	<u>Bromus inermis</u>	Page 46
B.B. Sheaths pilose - pubescent (rarely glabrous)		
C. Blades usually less than 5 mm. wide; rootstocks slender; on banks and hillsides.	<u>Bromus anomalus</u>	Page 43
C.C. Blades usually 3 to 8 mm. wide; open woods.	<u>Bromus carinatus</u>	Page 44
C.C.C. Blades usually 4 to 10 mm. wide; open woods.	<u>Bromus ciliatus</u>	Page 45

Group V.

- A. Plants of open grassland.
 - B. Found in sandhills or sandy areas, very long, drooping involute leaves, 2 to 5 mm. wide. Oryzopsis hymenoides Page 90
 - B.B. Found in dry or sandy soils.
 - C. Blades filiform less than 2 mm. wide. Aristida longiseta Page 38
 - C.C. Blades flat or involute, 2 mm. wide or more.
 - D. Ligule conspicuous 1 to 5 mm. long.
 - E. Ligule firm, 1 to 2 mm. long, notched in centre, forming two lateral lobes, ciliolate; prairies. Stipa spartea var curtiseta Page 121
 - E.E. Ligule thin, 3 to 4 mm. long; dry prairie. Stipa comata Page 119
 - E.E.E. Ligule firm, 4 to 5 mm. long, finely ciliate, moist prairies. Stipa spartea Page 121
 - D.D. Ligule not conspicuous.
 - E. Sheath margins long pubescent. Stipa viridula Page 122
 - E.E. Sheath margins glabrous.
 - F. Densely tufted plants of plains and dry slopes of hills and river valleys; blades pubescent above, glabrous beneath. Agropyron spicatum Page 29
 - F.F. Low ground; ligule 1 mm. long, finely ciliate. Agropyron pauciflorum Page 26
- A.A. Plants of woodland.
 - B. Plants with short root stocks.
 - C. Basal leaves 10 to 40 cm. long, stiff, edges rolled; basal portions of plant often purplish. Oryzopsis asperifolia Page 89
 - C.C. Basal leaves 2 to 20 cm. long, thin, dark green, often purplish at base. Schizachne purpurascens Page 109
 - B.B. Plants tufted.
 - C. Leaves 4 to 12 mm. wide, flat, tapering to a fine point, extremely scabrous on both surfaces. Cinna latifolia Page 57
 - C.C. Leaves 2 to 5 mm. wide, blades and sheaths puberulent. Trisetum spicatum Page 123
 - C.C.C. Leaves 1 to 3 mm. wide, involute or bristle-like, scabrous. Stipa Richardsonii Page 120
- A.A.A. Aquatic or moist land plants.
 - B. Moist land plants swollen or decumbent at base.

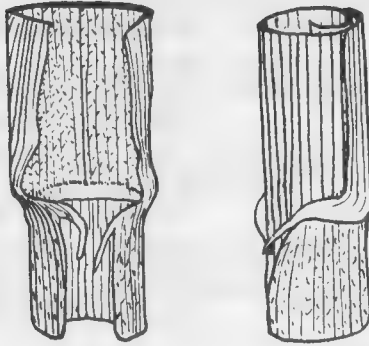
- C. Base of plant bulb-like; ligule distinctly notched on either side; meadows and roadsides. Phleum pratense Page 96
- C.C. Base decumbent; upper sheaths usually inflated; found at higher altitudes. Phleum alpinum Page 95
- B.B. Plants neither swollen nor decumbent at base.
- C. Plants usually of alkaline soils.
- D. Plants light bluish green; leaf blades flat or U-shaped, both sides scabrous, villous above, puberulent beneath. Hordeum jubatum Page 82
- D.D. Leaf blades glaucous, scabrous above, glabrous below; strongly alkaline, wet soils. Puccinellia Nuttalliana Page 107
- C.C. Plants not of strongly alkaline soils but wet places.
- D. Erect, loosely tufted, glabrous; ligule 2 to 5 mm. long, minutely pubescent on back; sheaths and leaves faintly cross-veined. Alopecurus aequalis Page 34
- D.D. Densely tufted plants of wet places; sheaths and leaf blades distinctly cross-veined; ligule 4 to 10 mm. long. Beckmannia Syzigachne Page 40
- C.C.C. Plants not of wet places but moist land.
- D. Blades 0.5 to 4 mm. wide, filiform when dry; ligule 1 to 3 mm. long, truncate or 3 pointed, pubescent on back. Agrostis hiemalis Page 32
- D.D. Blades 2 to 5 mm. wide; ligule 1 to 4 mm. long, truncate, lacerate. Sphenopholis obtusata Page 116
- D.D.D. Densely tufted; blades 2 to 5 mm. wide, rather firm; ligule up to 1 mm., truncate, ciliolate; upper sheaths glabrous, rarely pubescent. Elymus Macounii Page 71

Group VI.

- A. Plants of shallow water or mud.
- B. Blades 3 to 10 mm. wide, cross-veined, light or yellowish green; ligule truncate, lacerate, 2 to 8 mm. long. Fluminia festucacea Page 77
- B.B. Blades 1 to 3 cm. wide, light bluish-green; ligule chartaceous, dark brown, truncate, lacerate, long-ciliate, 1 mm. long. Phragmites communis Page 97
- A.A. Plants of wet meadows.
- B. Plants with stolons.
- C. Prostrate, rooting at nodes, blades narrow, stiff, appressed; ligule 1 to 3 mm., minutely hairy on back. Agrostis palustris Page 33

- C.C. Slightly stoloniferous; lower sheaths loose, upper ones often inflated; blades 2 to 6 mm. wide, margins very scabrous. Alopecurus pratensis Page 35
- B.B. Plants without stolons but possessing root stocks.
- C. Sheaths longer than internodes in basal shoots; ligule 1 to 5 mm. long, minutely retrorsely hairy on back. Agrostis alba Page 31
- C.C. Sheaths not longer than internodes.
- D. Blades 1 to 5 mm. wide; ligule truncate, lacerate and ciliate 1 to 3 mm. long. Calamagrostis neglecta Page 53
- D.D. Blades 2 to 4 mm. wide; ligule truncate or obtuse, lacerate or slightly ciliate, 2 to 6 mm. long. Calamagrostis inexpansa Page 51
- D.D.D. Blades 2 to 10 mm. wide; ligule truncate, lacerate, notched or split, 1 to 5 mm. long. Calamagrostis canadensis Page 50
- D.D.D.D. Blades 6 to 15 mm. wide; often glabrous and glaucous; ligule white, obtuse or acute, minutely pubescent on back, 2 to 5 mm. long; rootstocks scaly, pinkish. Phalaris arundinacea Page 93
- A.A.A. Plants of moist prairie.
- B. Plants with short scaly root stocks.
- C. Root stocks thick, 1 to 4 mm. in diameter; ligule 1 to 3 mm. long, obtuse. Andropogon furcatus Page 36
- C.C. Rootstocks less stout, 1 to 3 mm. in diameter; ligule 1 to 5 mm. long, obtuse to truncate, ciliate; Manitoba. Sorghastrum nutans Page 113
- B.B. Rootstocks without scales.
- C. Blades stiff, fine-pointed, 1 to 3 mm. wide, flat to involute, light bluish-green; ligule mostly acute, 2 to 6 mm. long. Calamagrostis montanensis Page 52
- C.C. Blades, lax, 2 to 8 mm. wide, short, dark green; ligule obtuse, toothed, lacerate, 1 to 3 mm. long; plants fragrant. Hierochloa odorata Page 81
- A.A.A.A. Plants of woodland.
- B. Blades up to 4 mm. wide; sheaths slightly scabrous, collar pubescent, with long, soft hairs; associated with pine forests. Calamagrostis rubescens Page 54
- B.B. Blades 2 to 10 mm. wide; ligule truncate, lacerate, notched or split, 1 to 5 mm. long. Calamagrostis canadensis Page 50

AGROPYRON ALBICANS



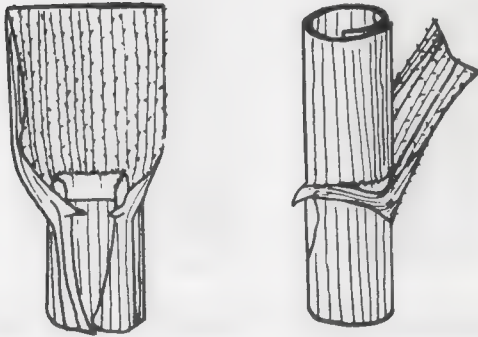
Agropyron albicans Scribn. and Smith. Awned
Northern Wheatgrass.

An erect, fine-leaved, perennial with a few
rootstocks, found on hills and dry prairies.

LEAVES rolled in bud-shoot. SHEATH round,
split with overlapping scarious margins, smooth
or scabrous. COLLAR divided, smooth, yellowish
or brown. AURICLES conspicuous, flattened or
ribbon-like, often curled, 1 to 3 mm. long.
LIGULE membranous, obtuse, lacerate, about 1 mm.
long. BLADE 1 to 3 mm. wide, 7 to 20 cm. long,
involute, scabrous and ridged on the upper surface,
smooth below; margins scabrous.

Authorities now consider this species to be
Agropyron dasystachyum(Hook.) Scribn. var albicans
(S & S) Senn.

AGROPYRON BAKERI



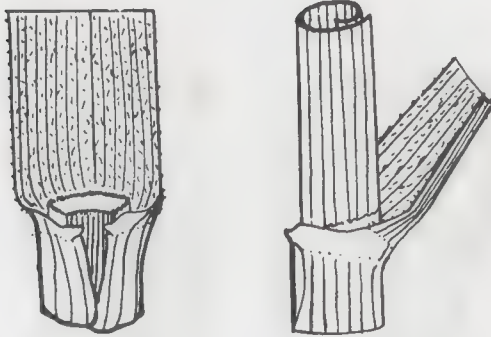
Agropyron Bakeri E. Nels. Baker's Wheatgrass.

An erect, bluish green, loosely tufted perennial without rootstocks, found on open slopes and prairie roadsides.

LEAVES rolled in bud-shoot. SHEATH round, split with narrow scarious margins, distinctly veined, usually glabrous, often pinkish at the base. COLLAR divided, light or yellowish green, glabrous. AURICLES claw-like or flattened, about 1 mm. long. LIGULE membranous, truncate, lacerate, sparsely ciliate. BLADE 2 to 5 mm. wide, 5 to 15 cm. long, flat to involute, tapering, ridged and very scabrous above, prominently veined, somewhat keeled, smooth or scaberulous below; margins scarious and scabrous.

Authorities now consider this species to be Agropyron trachycaulum (Link) Malte var Bakeri (E. Nels.) Senn.

AGROPYRON CRISTATUM



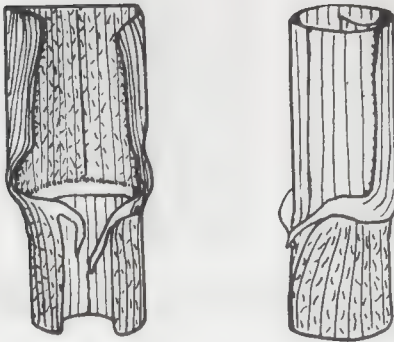
Agropyron cristatum (L.) Beauv. Crested Wheatgrass.

A light bluish green perennial, with a dense mass of fibrous roots in bunch form; an introduced species, very drought and cold resistant, doing well under limited moisture conditions in various types of soil.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping margins, smooth, slightly scabrous, or lowest often soft pubescent. COLLAR divided, distinct, light or yellowish green, smooth to ciliate. AURICLES claw-like, 0.5 to 1.5 mm. long. LIGULE membranous, truncate, lacerate, up to 1.5 mm. long. BLADE 2 to 8 mm. wide, 5 to 20 cm. long, flat or slightly involute, tapering to a sharp point, prominently veined, pale bluish green, scabrous and often soft pubescent on the upper surface, smooth or slightly scabrous below with a light colored midvein; margins scabrous.

This species can be distinguished from A. repens by its glabrous collar and prominently veined blades.

AGROPYRON DASYSTACHYUM

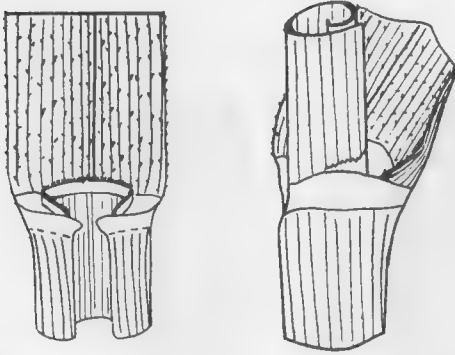


Agropyron dasystachyum (Hook.) Scribn. Northern Wheatgrass.

A light greyish green perennial with root-stocks, found on dry prairies in various types of soil.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping scarious margins, smooth or slightly scabrous; midrib often continuing part way down. COLLAR divided, smooth and light green. AURICLES claw-like, clasping, slender, 1 to 2 mm. long. LIGULE membranous, obtuse, lacerate, 1 mm. long or less. BLADE 2 to 6 mm. wide, 5 to 20 cm. long, flat to involute, ridged and very scabrous on the upper surface, smooth or sometimes scabrous near the base on the lower surface: margins scabrous.

AGROPYRON PAUCIFLORUM



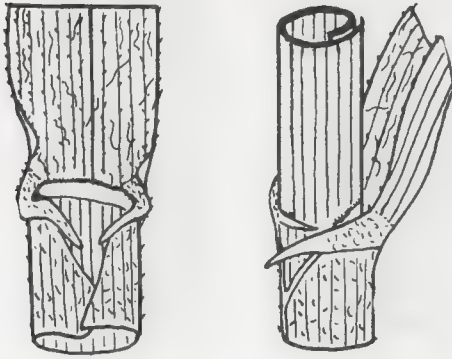
Agropyron pauciflorum Hitchc. Slender Wheat-grass, Western Ryegrass.

An erect, bunch-forming, native perennial with very short rootstocks, found in moist flats, meadows and roadsides; one of the more alkali tolerant hay and pasture grasses.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, glabrous, light green, white or purplish at the base. COLLAR continuous, distinct, glabrous, yellowish green, often oblique. AURICLES rudimentary or absent. LIGULE membranous, truncate, up to 1 mm. long, finely ciliate. BLADE 2 to 6 mm. wide, 5 to 25 cm. long, flat, narrowed at the base, tapering to a sharp point, medium green, glaucous, ridged and scabrous on upper surface, keeled and slightly scabrous below; margins strongly scabrous.

Authorities now consider this species to be Agropyron trachycaulum (Link) Malte var typicum Fern.

AGROPYRON REPENS



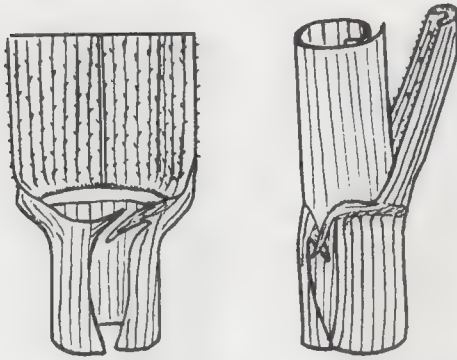
Agropyron repens (L.) Beauv. Quack grass, Couch grass.

An erect, sod-forming perennial with long rootstocks, found in the more humid areas.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, short; lower usually pubescent. COLLAR divided, distinct, broad, puberulent, yellowish or sometimes tinged with purple. AURICLES claw-like, slender, 1 to 3 mm. long. LIGULE membranous, obtuse, 0.5 to 1 mm. long, entire, lacerate, or sometimes ciliate. BLADE 3 to 10 mm. wide, 6 to 20 cm. long, flat or U-shaped, tapering to a sharp point, slightly keeled at the base, green, sometimes glaucous, harsh-scarious on margins and upper surface, usually sparsely pilose; smooth below.

Considerable variation occurs in this grass with regard to pubescence. Young plants and spring growth is usually more pubescent than older plants or growth produced later in the season. A. repens may be distinguished from A. cristatum by the puberulent collar and lesser degree of ridging on the leaves.

AGROPYRON SMITHII

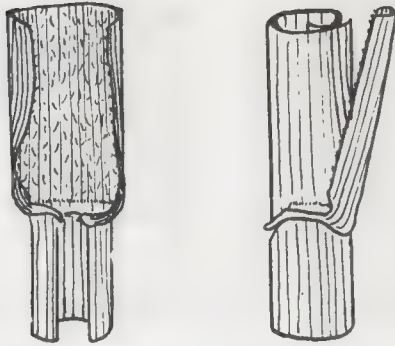


Agropyron Smithii Rydb. Western Wheatgrass,
Bluejoint.

An erect, sod-forming perennial with long, slender rootstocks, found in various soils of limited moisture content, doing well in gumbo flats where moisture supply is moderate; tolerates a fair amount of alkali.

LEAVES rolled in bud-shoot. SHEATH round, split, with scarious margins, prominently veined, glabrous, sometimes brown or purplish at the base. COLLAR continuous, medium broad, not well defined, glabrous, light green, sometimes oblique. AURICLES claw-like, clasping, sometimes purplish at the base. LIGULE membranous, inconspicuous, about 0.5 mm. long, truncate, lacerate or ciliate. BLADE 2 to 6 mm. wide, 5 to 25 cm. long, flat or involute, stiff, tapering to a sharp point, prominently ridged and scabrous (rarely pubescent) on the upper surface, smooth on the lower surface, glaucous, bluish green; margins scabrous.

AGROPYRON SPICATUM

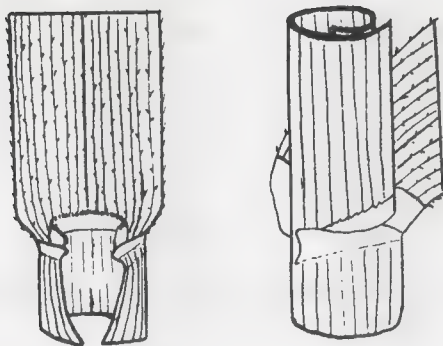


Agropyron spicatum (Pursh.) Scribn. and Smith.
Bluebunch Wheatgrass.

An erect, light green, bunch-forming grass with no rootstocks, found on dry slopes and prairies.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping scarious margins, strongly veined, smooth or scabrous. COLLAR continuous or sometimes divided, glabrous, yellowish. AURICLES absent, rudimentary or claw-like and fragile if present, up to 1.5 mm. long. LIGULE membranous, truncate, lacerate, very short, 0.5 mm. long. BLADE 1 to 5 mm. wide, 5 to 20 cm. long, flat to convolute, ridged, scabrous and hirsute on upper surface, with prominent midrib and veins on lower surface, often minutely pubescent between the veins.

AGROPYRON SUBSECUNDUM



Agropyron subsecundum (Link.) Hitchc. Awned
Wheatgrass.

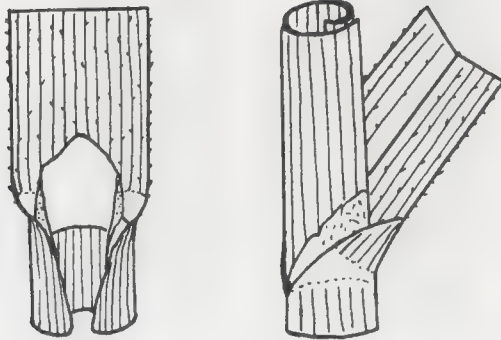
An erect, tufted perennial without rootstocks, found in moist flats, meadows and among bushes.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping scarious margins, glabrous, prominently veined, light green. COLLAR divided, well defined, light brown. AURICLES absent, claw-like if present. LIGULE membranous, obtuse or truncate, lacerate, brownish. BLADE 3 to 8 mm. wide, 4 to 20 cm. long, flat or involute, tapering to a sharp point, ridged and scabrous on the upper surface, slightly scabrous on the lower surface; margins white and very scabrous.

Primary basal sheath sometimes retrorsely pubescent.

Authorities now consider this species to be Agropyron trachycaulum (Link) Malte var unilaterale (Cassidy) Malte.

AGROSTIS ALBA



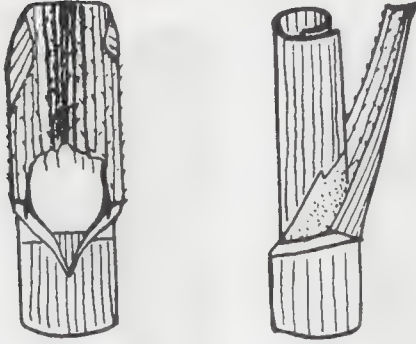
Agrostis alba L. Red-Top

A very fine, erect, dark green, sod-forming perennial with long slender rhizomes, found on moist soils.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, glabrous, distinctly veined with prominent mid-vein, longer than internode in basal shoots. COLLAR medium broad, divided, smooth, oblique, pale green. AURICLES absent. LIGULE membranous, 1 to 5 mm. long, acute or obtuse, entire, lacerate, or split, minutely retrorsely-hairy on the back. BLADE 2 to 7 mm. wide, 5 to 20 cm. long, flat, tapering to a sharp point, edges at the base often turned back, ridged on upper surface, mid-rib prominent below, scabrous on margins and both surfaces.

Red-top can be distinguished from timothy by the smooth collar margins, absence of notches on ligule and ridged upper surface of blade; from other Agrostis spp. in having a longer ligule and broader blades.

AGROSTIS HIEMALIS

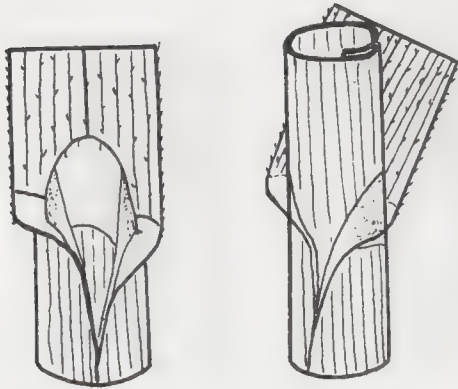


Agrostis hiemalis (Walt.) B.S.P. Rough Hairgrass,
Tickle grass.

A small, tufted perennial, erect when young; growing in edges of sloughs, moist meadows and on abandoned lands.

LEAVES rolled in bud-shoot. SHEATH round, split, glabrous, smooth, pale green to white with a purple tinge, slightly keeled. COLLAR narrow up to 1 mm. wide, pale green, inconspicuous. AURICLES absent. LIGULE membranous, 1 to 3 mm. long, truncate or three pointed, entire or lacerate, pubescent on back. BLADE 0.5 to 4 mm. wide, 2 to 10 cm. long, soft, usually involute, glabrous, tapering to a sharp point, distinctly veined and scabrous on the upper surface; lower surface smooth, keel distinct; margins scabrous.

AGROSTIS PALUSTRIS

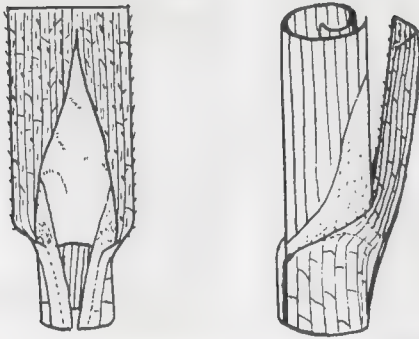


Agrostis palustris Huds. Creeping Bent-grass.

A stoloniferous, prostrate perennial, branching and rooting at the nodes, forming mats of foliage in moist places, usually on sandy soils.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, glabrous, pale green or purplish. COLLAR distinct, smooth, pale green, usually oblique. AURICLES absent. LIGULE membranous, thin, 1 to 3 mm. long, entire or finely lacerate; minutely hairy on the back. BLADE 1 to 4 mm. wide, 3 to 10 cm. long; flat, tapering, erect, distinctly ridged on the upper surface, slightly keeled below, scabrous on both surfaces and margins.

ALOPECURUS AEQUALIS

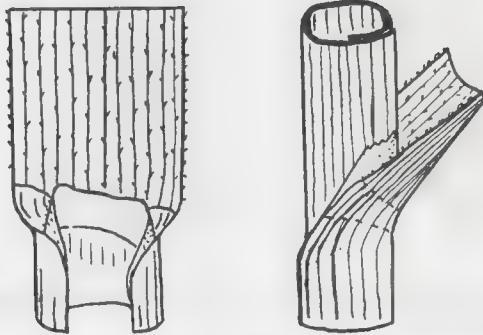


Alopecurus aequalis Sobol. Short-awned Foxtail.

A low, erect, tufted, glabrous perennial, growing in wet places.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, glabrous, green often purplish at base, with light veins. COLLAR medium broad, divided, oblique, glabrous, light brown. AURICLES absent. LIGULE membranous, 2 to 5 mm. long, obtuse, minutely pubescent on the back, particularly at base. BLADE 2 to 5 mm. wide, 4 to 15 cm. long, flat, tapering to a point, dull green, both surfaces and margins scabrous.

ALOPECURUS PRATENSIS

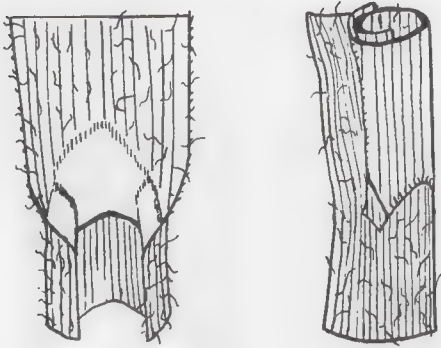


Alopecurus pratensis L. Meadow Foxtail.

An erect, dark green, slightly stoloniferous perennial forming loose tufts, found in low fields and waste places.

LEAVES rolled in bud-shoot. SHEATH round, split with broad, overlapping, hyaline margins, glabrous, green, often purplish at the base; lower sheaths loose, upper ones often inflated. COLLAR divided, often oblique, glabrous, yellowish. AURICLES absent. LIGULE coarse-membranous, obtuse or truncate, entire, undulate or oblique, faintly striate, ciliate, puberulent on the back, variable in shape and margin 1 to 3 mm. long. BLADE 2 to 6 mm. wide, 5 to 15 cm. long, flat, tapering to a point, ridged and scabrous on the upper surface, slightly keeled and scaberulous or smooth below; margins very scabrous.

ANDROPOGON FURCATUS

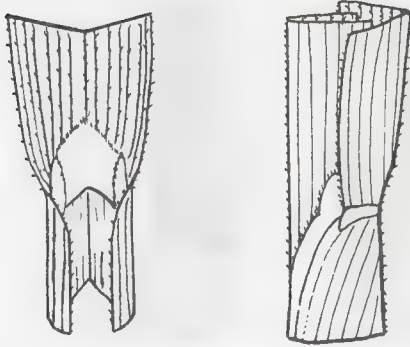


Andropogon furcatus Muhl. Big Bluestem.

A tall, erect, perennial with short, thick, scaly rootstocks, found on sandy to loam soils of moderate moisture content.

LEAVES rolled in a flattened bud-shoot. SHEATH compressed, usually purplish at base and below ground, softly pubescent or sometimes glabrous, veins distinct, split with hyaline margins. COLLAR medium broad, often indistinct, light or yellowish green, sometimes divided by midvein, pubescent at least on margins. AURICLES absent. LIGULE membranous, obtuse, 1 to 3 mm. long, lacerate and often ciliate. BLADE 2 to 10 mm. wide, 8 to 50 cm. long, flat or V-shaped, constricted at base, tapering to a sharp point, veins distinct, midvein prominent, extending part way down the sheath, slightly scabrous or smooth above, smooth below, with long silky hairs at the base, light green often tinged with red especially near the tip; margins scabrous.

ANDROPOGON SCOPARIUS

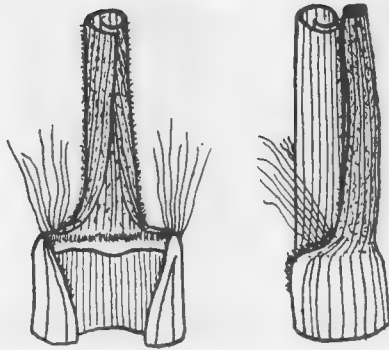


Andropogon scoparius Michx. Little Bluestem.

An erect, short leaved, tufted perennial with short scaly rootstocks, found on dry slopes and sandy soil, associated with Stipa comata and Sporobolus cryptandrus.

LEAVES folded in bud-shoot. SHEATH compressed, keeled, split, quite open in older leaves, smooth or scabrous, often purplish at the base. COLLAR continuous, broad, glabrous, light green or pinkish. AURICLES absent. LIGULE membranous, obtuse to truncate, ciliate, 1 to 2 mm. long. BLADE 2 to 8 mm. wide, 5 to 15 cm. long, flat to folded, constricted at the base, bluntly pointed, little twisted, veins distinct, midvein prominent, scabrous on upper surface and margins, smooth below, light green, often tinged with red, sometimes glistening, often glaucous.

ARISTIDA LONGISETA

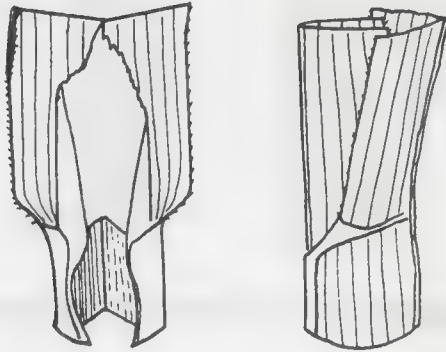


Aristida longiseta Steud. Red Three-awn.

An erect, rather fine-leaved, densely tufted perennial without rootstocks, found on gravelly slopes and dry plains.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, prominently veined, scaberulous upwardly, sometimes smooth. COLLAR indistinct, continuous and whitish green when evident, with tufts of long hairs at margins. AURICLES absent. LIGULE a fringe of fine hairs about 0.5 mm. long. BLADE 1 to 2 mm. wide, 3 to 15 cm. long, bristle-like or involute, often curved or flexuous, both surfaces and margins very scabrous upwardly; veins not very distinct.

AVENA HOOKERI

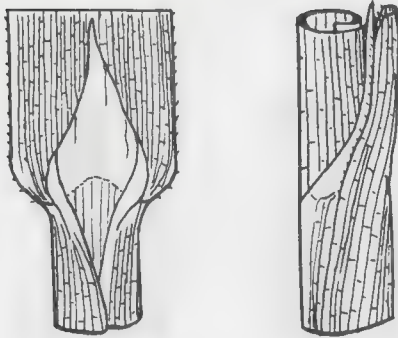


Avena Hookeri Scribn. Hooker's Oatgrass.

An erect, densely tufted, smooth-leaved perennial, found on hillsides and ridges in areas of moderate moisture.

LEAVES folded in bud-shoot. SHEATH compressed, keeled, split with hyaline margins, prominently veined, smooth and glabrous, rather short, pale at the base. COLLAR divided, often inconspicuous, yellowish, light brown or purplish. AURICLES absent. LIGULE membranous, obtuse or acute 2 to 5 mm. long. BLADE 2 to 5 mm. wide, 2 to 12 cm. long, flat to folded, firm, very erect, linear and boat-shaped at the tip, smooth; prominent midrib and thickened margins scabrous and whitish.

BECKMANNIA SYZIGACHNE



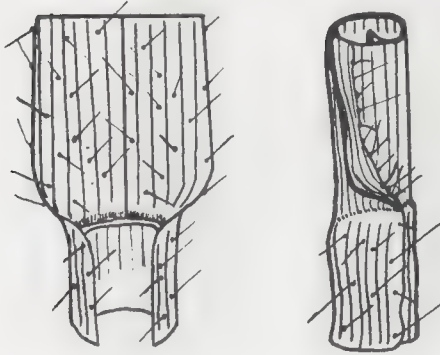
Beckmannia Syzigachne (Steud.) Fern. Slough-grass.

An erect, tufted annual, forming large bunches, growing in sloughs and moist meadows usually in the presence of water.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, glabrous, smooth, cells muriform in venation. COLLAR inconspicuous, divided, smooth, brown or yellowish in color. AURICLES absent. LIGULE membranous, 4 to 10 mm. long, obtuse often lacerate at the tip in age. BLADE 5 to 10 mm. wide, 8 to 20 cm. long, flat, more or less stiff, scabrous above, smooth below; midvein present but not prominent.

In some cases this species is perennial in growth habit.

BOUTELOUA CURTIPENDULA

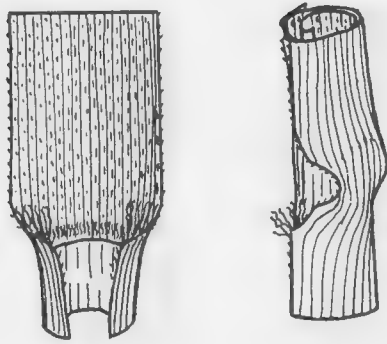


Bouteloua curtispendula (Michx.) Torr. Side-oats grama.

An erect, sod-forming perennial with short, stout, scaly rhizomes, found usually on heavier soils of moderate moisture content but often on dry slopes and rocky hills, associated with Andropogon furcatus.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, prominently veined, usually pubescent, often purplish at the base. COLLAR medium broad, yellowish green or brown, continuous, with few hairs at the mouth. AURICLES absent. LIGULE membranous, truncate, lacerate, ciliate, up to 1 mm. long, sometimes appearing as a dense fringe of hairs. BLADE 2 to 7 mm. wide, 5 to 30 cm. long, flat to convolute, tapering to a sharp point, little twisted, distinctly veined, scabrous above, smooth below, with few long hairs scattered on both surfaces; midvein distinct; margins scabrous to ciliate.

BOUTELOUA GRACILIS

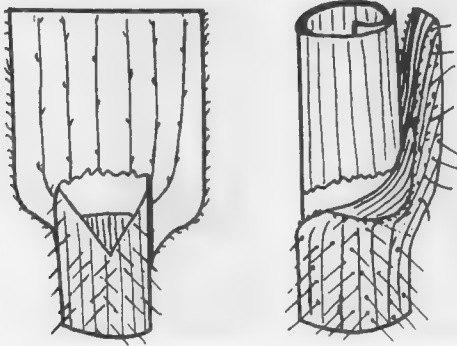


Bouteloua gracilis (H.B.K.) Lag. Blue Grama.

A short, densely tufted perennial with short, scaly rootstocks, found on dry hills and plains; a valuable range grass associated with Stipa comata and Koeleria cristata.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, distinctly veined, glabrous or sparsely pilose. COLLAR continuous, medium broad, distinctly yellowish green, with long hairs on inside of margins. AURICLES absent. LIGULE a dense fringe of hairs up to 0.5 mm. long. BLADE 1 to 2.5 mm. wide, 2 to 15 cm. long, flat to convolute, tapering to a sharp point, little twisted, light to medium green, curled, prominently veined above and below, scabrous or pubescent on upper surface especially near the base, glabrous below.

BROMUS ANOMALUS

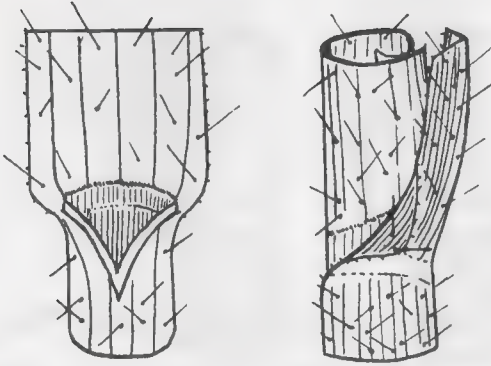


Bromus anomalus Rupr. Nodding Brome.

A tall, native perennial with slender root-stocks, found in meadows, on banks and hillsides.

LEAVES rolled in bud-shoot. SHEATH closed to near the top in younger leaves and split in older ones, round, retrorsely pubescent, prominently veined. COLLAR indistinct. AURICLES absent. LIGULE membranous, truncate, brownish, lacerate, up to 1 mm. long. BLADE 2 to 5 mm. wide, up to 30 cm. long, flat, prominently veined and scabrous on both surfaces, often pubescent above; margins scabrous.

BROMUS CARINATUS

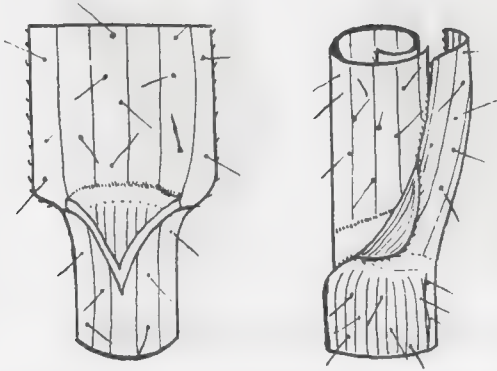


Bromus carinatus Hook. and Arn. California Brome

A hairy, erect annual or biennial found in open woods, meadows and waste places.

LEAVES rolled in flattened bud-shoot. SHEATH slightly compressed to round, split only part way down, prominently veined; midvein continuing down the sheath, retrorsely pilose, rarely glabrous. COLLAR indistinct, very narrow, divided, brownish green. AURICLES absent. LIGULE membranous, longitudinally corrugate, acute or obtuse, lacerate, 1 to 2 mm. long. BLADE 3 to 8 mm. wide, up to 30 cm. long, flat, tapering, prominently veined and pilose on both surfaces; margins scabrous.

BROMUS CILIATUS

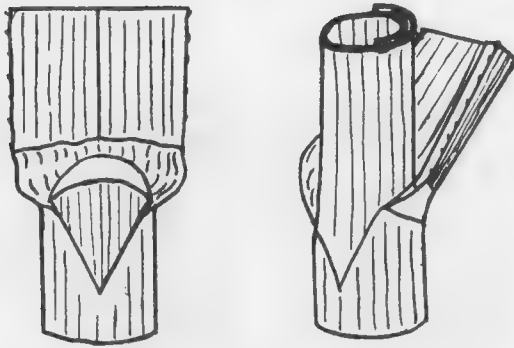


Bromus ciliatus L. Fringed Brome.

A tall, native perennial growing in moist soils, meadows and open woods.

LEAVES rolled in bud-shoot. SHEATH round, closed to near the top, prominently veined, retro-sely pilose or glabrous in older leaves. COLLAR divided, narrow, glabrous, pale green or brownish; margins sometimes constricted. AURICLES absent. LIGULE coarse membranous, truncate, entire or lacerate, about 1 mm. long. BLADE 4 to 10 mm. wide, 8 to 20 cm. long, flat, tapering to a sharp point, dark green, glabrous or softly pubescent, prominently veined on both surfaces with whitish midvein underneath extending part way down the sheath; margins scabrous.

BROMUS INERMIS

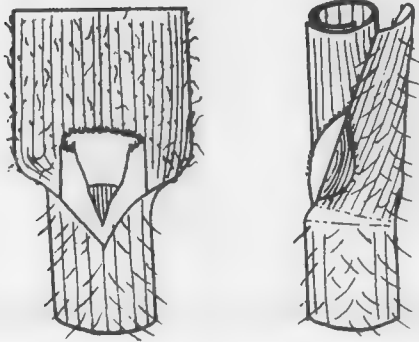


Bromus inermis Leyss. Smooth Brome.

A tall perennial with creeping scaly root-stocks, growing well in loam soils of the more humid areas; cultivated, escaping to fence rows and roadsides.

LEAVES rolled in bud-shoot. SHEATH round, closed to near the top, prominently veined, glabrous or lower sheath rarely pubescent, sometimes scabrous. COLLAR narrow, continuous or divided by midvein, glabrous, light or yellowish green. AURICLES absent or rarely rudimentary, LIGULE membranous, obtuse, entire or lacerate, often brownish at the base, about 1 mm. long. BLADE 4 to 12 mm. wide, 15 to 40 cm. long, flat, tapering to a sharp point, dark green, usually glabrous on both surfaces but sometimes minutely pubescent; veins and midrib distinct below; margins scabrous.

BROMUS JAPONICUS

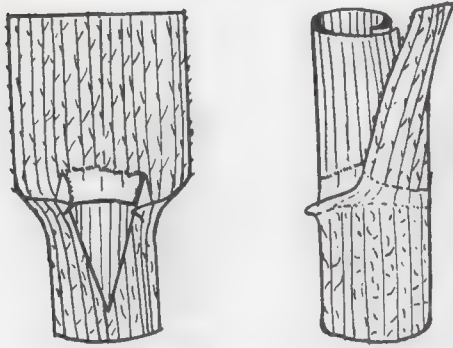


Bromus japonicus Thunb. Japanese Chess.

A slender, tufted annual, found as a weed in waste places.

LEAVES rolled in bud-shoot. SHEATH round, split only part of the way down, prominently veined, pilose, often purplish tinged. COLLAR divided, narrow, pubescent at least at the margins, brownish or light green, often indistinct. AURICLES absent. LIGULE membranous, truncate to obtuse, coarsely lacerate, teeth fringed with long silky hairs, 1 to 2 mm. long. BLADE 2 to 4 mm. wide, 4 to 12 cm. long, flat, obtuse tipped, long pubescent on both surfaces but more so on the upper surface, distinctly veined and midribbed below; margins and upper surface scabrous as well as pubescent.

BROMUS PUMPELLIANUS

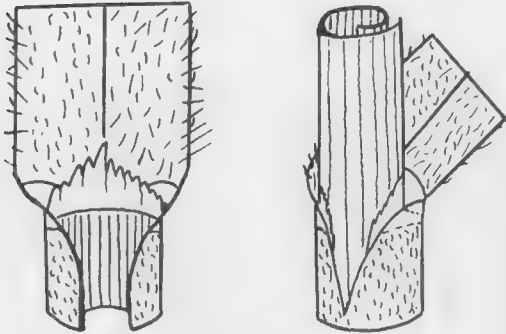


Bromus Pumpellianus Scribn. Northern Awnless
Brome.

An erect, dark green, sod-forming perennial with strong creeping, scaly rootstocks, found on hillsides and meadows.

.LEAVES rolled in bud-shoot. SHEATH round, closed to near the top, prominently veined, smooth or scabrous, often purplish at the base. COLLAR continuous, narrow, glabrous, yellowish or light green. AURICLES absent or occasionally present as flat divergent projections. LIGULE membranous, brown, truncate, lacerate, 1 to 3 mm. long. BLADE 5 to 10 mm. wide, 10 to 25 cm. long, flat, tapering to a point, distinctly veined and very scabrous below, midrib extending part way down the sheath; margins scarious and very scabrous.

BROMUS TECTORUM



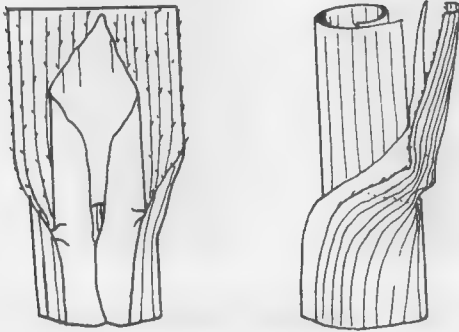
Bromus tectorum L. Downy Chess.

An erect, tufted annual, somewhat purplish tinged, found in waste places.

LEAVES rolled in bud-shoot. SHEATH round, split part way only, prominently veined, keeled at the top, softly pubescent, pale green or purplish tinged. COLLAR usually indistinct, narrow, pubescent, often divided, pale green. AURICLES absent. LIGULE membranous, truncate to acute, lacerate, coarsely toothed, 1 to 3 mm. long. BLADE 4 to 8 mm. wide, 5 to 12 cm. long, flat, tapering to a sharp point, pale green, pubescent on both surfaces and margins, faintly veined; midrib distinct below.

This grass may be distinguished from B. ciliatus by its longer ligule and from most other forms by its pubescence.

CALAMAGROSTIS CANADENSIS

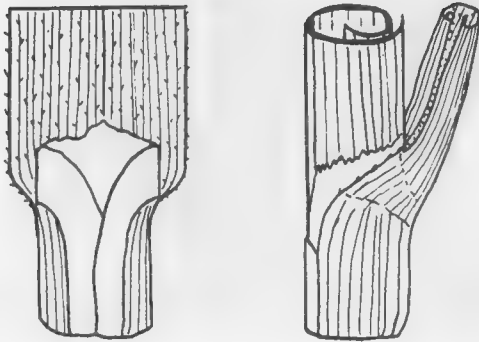


Calamagrostis canadensis (Michx.) Beauv. Marsh
Reedgrass.

A tall, erect, tufted perennial with creeping rootstocks, found in meadows, wet or swampy places, and open woods.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, distinctly veined, glabrous, yellowish at the base. COLLAR indistinct, continuous or divided, glabrous, yellowish green, often oblique. AURICLES absent. LIGULE membranous, truncate, lacerate, often irregular or split, 1 to 5 mm. long. BLADE 2 to 10 mm. wide, 7 to 40 cm. long, medium green, tapering to a sharp point, ridged and scabrous above, midribbed and smooth or slightly scabrous below; margins scabrous.

CALAMAGROSTIS INEXPANSA

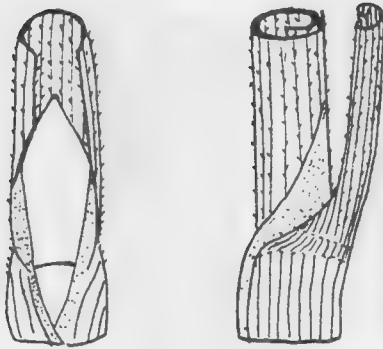


Calamagrostis inexpansa A. Gray. Northern Reed-grass.

A tall, erect, tufted perennial with slender rootstocks, found in meadows and wet places.

LEAVES rolled in bud-shoot. SHEATH round or slightly compressed, split with scarious overlapping margins, prominently veined, sometimes purplish at the base. COLLAR indistinct, continuous or divided, glabrous, yellowish green, often oblique. AURICLES absent. LIGULE membranous, obtuse or truncate, lacerate or slightly ciliate, 2 to 6 mm. long. BLADE 2 to 4 mm. wide, 10 to 30 cm. long, flat or involute, convolute in young shoots, firm, rigid, ridged and very scabrous above, smooth or lightly scabrous below, medium to light green; margins scabrous.

CALAMAGROSTIS MONTANENSIS

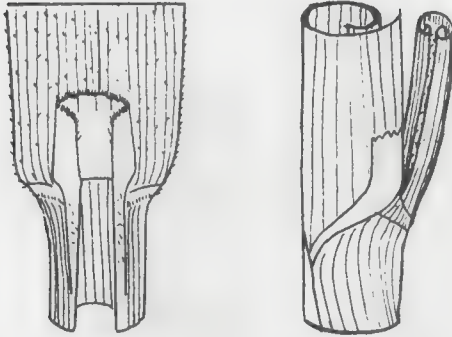


Calamagrostis montanensis Scribn. Plains
Reedgrass.

An erect, sod-forming perennial with slender creeping rootstocks, found on dry prairies.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, prominently veined with midrib extending down the sheath, light green, slightly scabrous. COLLAR indistinct, glabrous, light or brownish green. AURICLES absent. LIGULE membranous, acute, entire or lacerate in older leaves, 2 to 7 mm. long. BLADE 1 to 3 mm. wide, 5 to 20 cm. long, light bluish green, stiff, flat to involute, tapering to a fine point, prominently veined, ridged and scabrous on the upper surface, faintly midribbed and scabrous below; margins scabrous.

CALAMAGROSTIS NEGLECTA

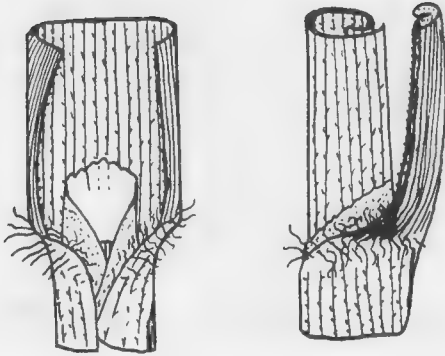


Calamagrostis neglecta (Ehrh.) Gaertn. Narrow Reedgrass.

An erect, narrow-leaved perennial with long, slender rootstocks, found in wet places or sandy shores, associated with C. canadensis.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, distinctly veined, glabrous, white or purplish below. COLLAR indistinct, narrow, continuous, glabrous, light or yellowish green. AURICLES absent. LIGULE membranous, truncate, lacerate and ciliate, 1 to 3 mm. long. BLADE 1 to 5 mm. wide, 8 to 30 cm. long, flat to convolute, tapering to a sharp point, ridged and scabrous on upper surface, smooth or scabrous below, glaucous, green, usually erect; midvein indistinct; margins scabrous.

CALAMAGROSTIS RUBESCENS

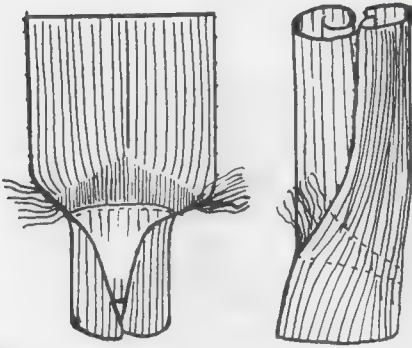


Calamagrostis rubescens. Buckl. Pine Grass.

An erect, sod-forming perennial with extensive, creeping rootstocks giving rise to numerous leaves along their length, found under humid conditions, associated with Lodge-pole Pine.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, distinctly veined, often purplish at the base, scabrous. COLLAR distinct, divided by midrib, pubescent with long soft hairs. AURICLES absent. LIGULE membranous, up to 4 mm. long, obtuse or acute, lacerate in age. BLADE up to 4 mm. wide, 10 to 30 cm. long, flat or involute, ascending with curved or drooping tips; upper and lower surfaces scaberulous; margins scabrous.

CALAMOVILFA LONGIFOLIA

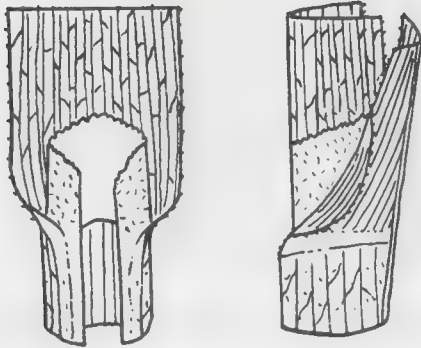


Calamovilfa longifolia (Hook.) Scribn. Sand
Reedgrass.

A tall, erect perennial with long scaly rootstocks, and long, coriaceous leaves, found in dry, sandy or drift soils, often associated with Andropogon scoparius and Sporobolus cryptandrus

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, distinctly veined, usually smooth but may be slightly scabrous or pubescent, light green, often pinkish at the base. COLLAR distinct, broad, continuous, yellowish, with tufts of fine hairs on the inside margins. AURICLES absent. LIGULE a fringe of hairs 1 to 3 mm. long. BLADE 4 to 12 mm. wide, 10 to 50 cm. long, flat to involute, firm, coriaceous, tapering to a long, fine point, smooth on both surfaces, light green, not prominently veined; margins scarious and slightly scabrous.

CATABROSA AQUATICA

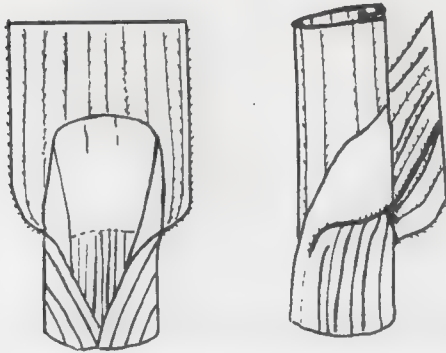


Catabrosa aquatica (L.) Beauv. Brookgrass.

An aquatic perennial with creeping bases and soft, flat leaves and very conspicuous ligules.

LEAVES folded in bud-shoot. SHEATH round or slightly flattened, split part way down with hyaline margins, smooth, and often purplish at the base. COLLAR distinct, narrow, continuous, glabrous, lighter or darker green than the leaf blade. AURICLES absent. LIGULE membranous, obtuse, 3 to 8 mm. long. BLADE 2 to 8 mm. wide, usually less than 10 cm. long, obtuse at the tip, flat and flaccid, smooth on both sides, with a fine mid-vein.

CINNA LATIFOLIA

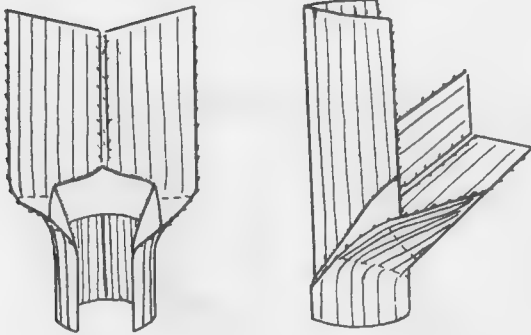


Cinna latifolia (Trev.) Criseb. Slender Wood-grass.

A tall, broad-leaved, slightly tufted perennial without rootstocks, sometimes bulbous, found in damp woods.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, prominently veined, purplish at the base, smooth. COLLAR divided, distinct, purplish or dark brown, glabrous. AURICLES absent. LIGULE membranous, obtuse, usually lacerate, up to 1 cm. long. BLADE 4 to 12 mm. wide, 10 to 25 cm. long, flat, tapering to a fine point, finely scabrous on both surfaces; midrib present, extending part way down the sheath.

DACTYLIS GLOMERATA

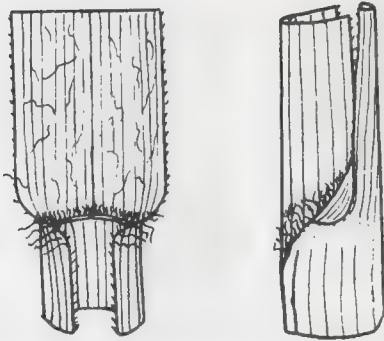


Dactylis glomerata L. Orchard Grass.

A tall, smooth, tufted perennial without rootstocks, found in waste places and along roadsides in the more humid regions.

LEAVES folded in bud-shoot. SHEATH flattened, keeled, split part of the way down, finely but distinctly veined, glabrous, pale green or purplish below. COLLAR divided, broad, glabrous, yellowish. AURICLES absent. LIGULE membranous, truncate and awn-tipped or obtuse, often split or lacerate, ciliolate, 2 to 8 mm. long. BLADE 2 to 10 mm. wide, 5 to 25 cm. long, flat to folded, tapering, pale green, often glaucous, indistinctly veined above and below but with deep furrow over a prominent and scabrous midrib; scarious margins very scabrous.

DANTHONIA CALIFORNICA

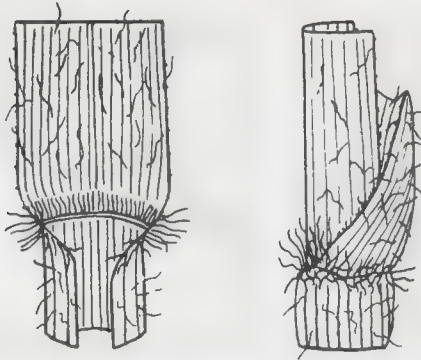


Danthonia californica var. americana. (Scribn.)
Hitchc. California Oatgrass.

A light green, tufted perennial with no root-stocks, found in meadows and open woods.

LEAVES folded in bud-shoot. SHEATH round, split with hyaline margins, pale green, prominently veined, glabrous. COLLAR indistinct in lower leaves, glabrous on outside, villose tufts at margins, continuous. AURICLES absent. LIGULE a fringe of very short hairs fused at the base. BLADE 2 to 4 mm. wide, 5 to 20 cm. long, flat to involute, tapering to a sharp point, prominently veined above and below, glabrous below, pubescent above, scabrous on scarious margins, light green.

DANTHONIA INTERMEDIA

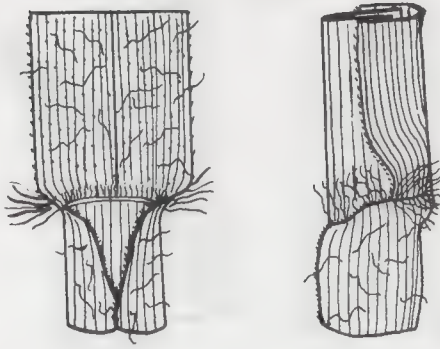


Danthonia intermedia Vasey. Wild Catgrass,
Timber Oatgrass.

A short, tufted perennial with no rootstocks,
found on low prairies and hillsides.

LEAVES folded in bud-shoot. SHEATH round,
split with hyaline margins, pale green, prominently
veined, very pilose-pubescent. COLLAR distinct,
narrow, yellowish green, continuous, with long
hairs all around and on inside margins. AURICLES
absent. LIGULE a fringe of hairs up to 1 mm. long.
BLADE 1 to 3 mm. wide, 5 to 15 cm. long, flat to
involute, tapering to a sharp point; somewhat
ridged and glabrous or sparsely hairy on the upper
surface, long-pubescent on the lower surface; mar-
gins scarious and very slightly scabrous.

DANTHONIA PARRYI

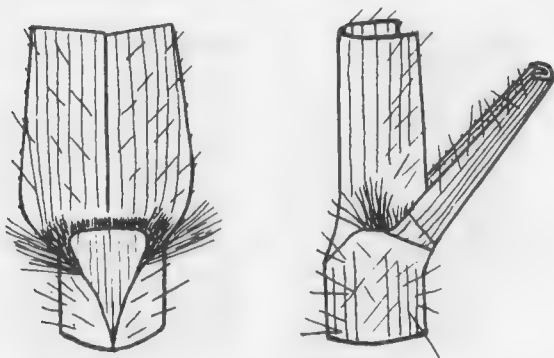


Danthonia Parryi Scribn. Parry Oatgrass.

An erect, light yellowish green, densely tufted perennial without rootstocks but with many overlapping sheaths at the base, found on open grasslands and slopes of the Alberta foothills.

LEAVES folded in bud-shoot. SHEATH round, split with overlapping scarious margins, distinctly ridged at the upper end, lower numerous sheaths yellowish and glabrous. COLLAR a narrow dark continuous ridge at which blades break off easily, with tufts of long stiff hairs at the margins. AURICLES absent. LIGULE a fringe of fine hairs less than 0.5 mm. long. BLADE 1 to 3 mm. wide, 10 to 25 cm. long, flat to involute, mostly erect-flexuous and narrow or filiform, distinctly veined above and below but no midrib evident, scaberulous on upper surface and on the scarious margins, glabrous below, yellowish green.

DANTHONIA SPICATA

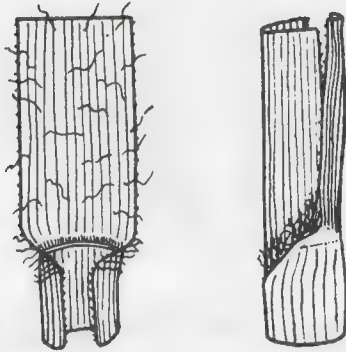


Danthonia spicata (L.) Beauv. Poverty Oatgrass.

A short-leaved, light green, tufted perennial, found on dry, poor, sandy or gravelly soil. In depleted natural pastures it soon predominates because although grazed when young, it soon turns wiry, tough and unpalatable.

LEAVES folded (involute) in bud-shoot. SHEATH round, split with scarious margins, pale green to white, usually pilose-pubescent. COLLAR narrow, continuous, often indistinct, light or yellowish green with long hairs at the margins. AURICLES absent. LIGULE a fringe of hairs 0.2 to 1.2 mm. long. BLADE 2 to 3 mm. wide, basal leaves 5 to 15 cm. long, flat to convolute, tapering to a sharp point, twisted and curled, usually sparsely pilose but often glabrous, prominently veined on both surfaces; under surface bright green, sometimes glossy; upper surface dull green or glaucous; margins scabrous.

DANTHONIA UNISPICATA



Danthonia unispicata Munro. Dwarf Oatgrass.

An erect, short perennial growing in dense spreading tufts with no rootstocks, on open prairies and hills.

LEAVES folded in bud-shoot. SHEATH round, split with overlapping scarious margins, prominently veined, glabrous or upper ones pilose. COLLAR distinct, broad, flared up the blade, continuous, yellowish, with tufts of long hairs at the margins. AURICLES absent. LIGULE a fringe of fine hairs. BLADE 1 to 3 mm. wide, 5 to 12 cm. long, flat to involute, light green, veins not very prominent, pilose above, glabrous or slightly pilose below, light green, tapering to a fine point; scarious margins scabrous.

DESCHAMPSIA CAESPITOSA

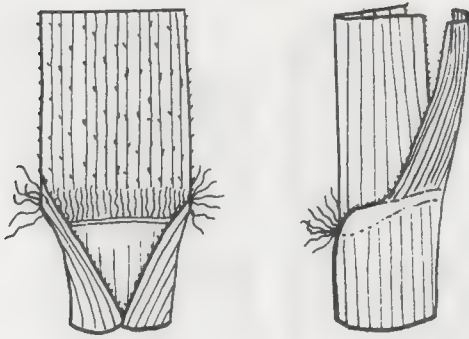


Deschampsia caespitosa (L.) Beauv. Tufted Hair-grass.

An erect, densely tufted perennial without rootstocks, growing in wet places.

LEAVES folded in bud-shoot. SHEATH compressed, keeled, prominently veined, split with overlapping hyaline margins, light green or straw colored. COLLAR narrow, divided, sometimes indistinct, yellowish green or brownish. AURICLES absent. LIGULE membranous, acuminate, entire or sometimes split, 4 to 10 mm. long, very prominent, continuous with margins of sheath. BLADE 1 to 5 mm. wide, 5 to 30 cm. long, flat to folded, rather firm and bristle-like, contracted at the collar, often twisted, prominently ridged and scabrous above, smooth or slightly scabrous below, light green; margins scabrous.

DISTICHLIS STRICTA

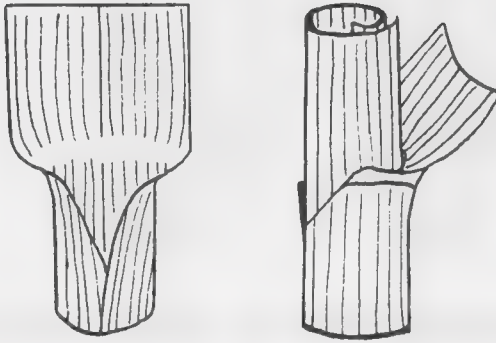


Distichlis stricta (Torr.) Rydb. Alkali Grass,
Salt Grass.

A dioecious, sod-forming perennial with extensive scaly creeping rootstocks and stiff, sharp-pointed new shoots, found on alkaline soils.

LEAVES folded in bud-shoot. SHEATH round, split with overlapping scarious margins, usually glabrous, basal ones usually yellowish. COLLAR narrow, continuous, distinct, yellowish with tufts of long hairs at the margins. AURICLES absent. LIGULE a fringe of hairs fused at the base, less than 0.5 mm. long. BLADE 2 to 4 mm. wide, 1 to 15 cm. long, tapering to a fine point, flat to involute, ridged and scabrous on upper surface with few long hairs especially near the base, smooth below; margins very scabrous; lower blades much shorter than upper ones.

ECHINOCHLOA CRUS-GALLI

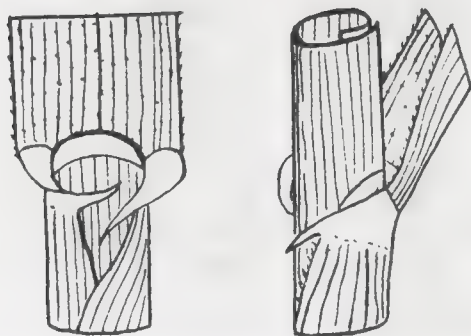


Echinochloa Crus-Galli (L.) Beauv. Barnyard Grass.

. A coarse annual with ascending shoots, found in gardens and waste places.

LEAVES rolled in a flattened bud-shoot. SHEATH flattened, keeled, split with hyaline margins, smooth, glabrous, pale green. COLLAR broad, continuous, glabrous, yellowish green. AURICLES absent. LIGULE absent. BLADE 8 to 15 mm. wide, 10 to 30 cm. long, flat or V-shaped, glabrous, pale or yellowish green, keeled below; margins smooth or scabrous.

ELYMUS CANADENSIS

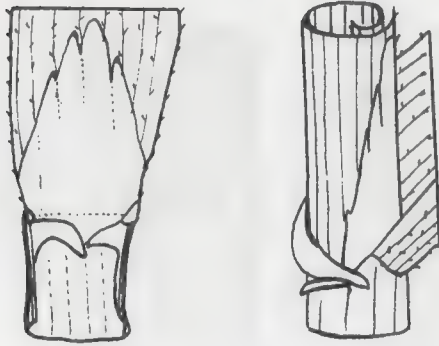


Elymus canadensis L. Canada Wild Rye, Nodding Wild Rye.

A tall, erect, dark green or glaucous perennial with short rootstocks, found on sandy to loam soils of moderate moisture content, along stream banks and in damp open woods.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping scarious margins, the inner usually broadly hyaline, the outer often ciliate; prominently veined, green or glaucous, base often purplish. COLLAR broad, continuous, often oblique, glabrous, yellowish or light green. AURICLES claw-like, clasping, 1 to 2 mm. long. LIGULE coarse-membranous, obtuse or truncate, lacerate and short-ciliate. BLADE 3 to 20 mm. wide, 5 to 40 cm. long, flat to convolute, tapering to a sharp point, prominently veined above and below, dark green, sometimes glaucous; upper surface dull and slightly scabrous; lower surface glabrous with prominent midrib; margins scabrous.

ELYMUS CONDENSATUS

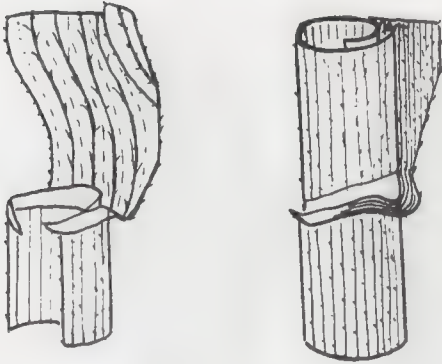


Elymus condensatus Presl. Giant Wild Rye.

A very tall, coarse, bunch forming perennial with short, thick, knotted rootstocks, found along ditches and in sandy soil of moderate moisture content.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, prominently but finely veined, smooth or scaberulous, light green, base brownish or faintly purple. COLLAR narrow, continuous, yellow, sometimes divided and indistinct, glabrous. AURICLES claw-like, clasping, 2 to 4 mm. long. LIGULE membranous, obtuse or truncate, lacerate, 2 to 7 mm. long. BLADE 5 to 15 mm. wide, 15 to 50 cm. long, flat to convolute, tapering to a sharp point, prominently veined and scabrous above, scaberulous and less distinctly veined below, fairly thick and stiff; margins scarious and often scabrous.

ELYMUS GLAUCUS

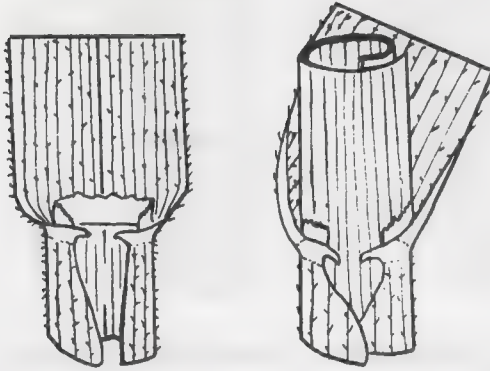


Elymus glaucus Buckl. Blue Wild Rye.

A tall, coarse, bluish green, tufted perennial without rootstocks, found in open woods, meadows and hillsides of moderately moist areas.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping scarious margins, smooth or scabrous, distinctly veined. COLLAR narrow, continuous or sometimes divided, glabrous, yellowish or brownish, coriaceous at the margins, often oblique. AURICLES claw-like, clasping, 2 to 4 mm. long, sometimes absent. LIGULE membranous, truncate, lacerate, 1 to 2 mm. long. BLADE 5 to 15 mm. wide, 5 to 30 cm. long, flat, becoming convolute in drying, usually lax, tapering but lower not sharp-pointed; scabrous on both surfaces, not prominently veined; margins scarious and scabrous.

ELYMUS INNOVATUS

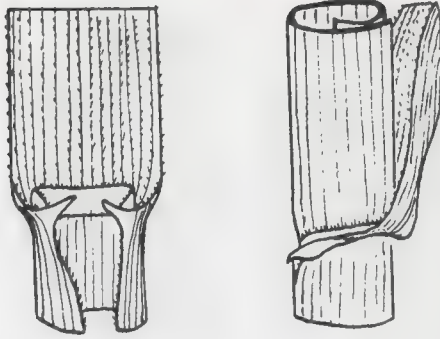


Elymus innovatus Beal. Hairy Wild Rye.

A tall, erect perennial with slender, scaly rootstocks, found in open woods and gravelly places.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, lower sheaths scabrous, upper ones usually smooth, prominently veined. COLLAR indistinct, narrow, divided, light green. AURICLES claw-like, 1 to 2 mm. long, very often absent. LIGULE membranous, truncate, 0.5 mm. long or less. BLADE 2 to 8 mm. wide, 5 to 25 cm. long, flat to convolute, somewhat rigid, tapering to a fine point, scabrous above and below; margins very scabrous; veins more prominent above than below.

ELYMUS MACOUNII

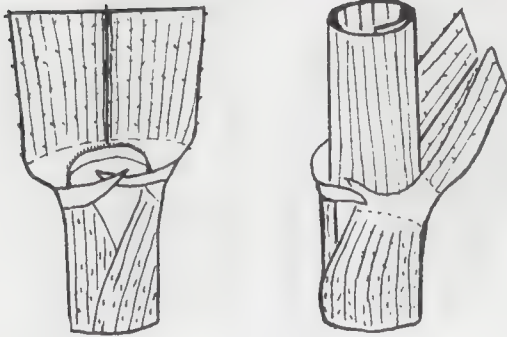


Elymus Macounii Vasey. Tufted Wild Rye.
Macoun's Wild Rye.

An erect, densely tufted perennial with no rootstocks, found in meadows and open places where a medium amount of moisture is available.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, prominently veined, lower retrorsely pubescent, upper glabrous, often purplish at the base. COLLAR very often indistinct, divided, light or brownish green, glabrous. AURICLES absent, rudimentary or in some cases claw-like. LIGULE membranous, truncate, ciliate, up to 1mm. long. BLADE 2 to 5 mm. wide, 5 to 20 cm. long, erect, rather firm, flat to involute, tapering to a fine point, usually scabrous on both sides, with midvein below extending part way down the sheath; margins scarious and scabrous.

ELYMUS VIRGINICUS



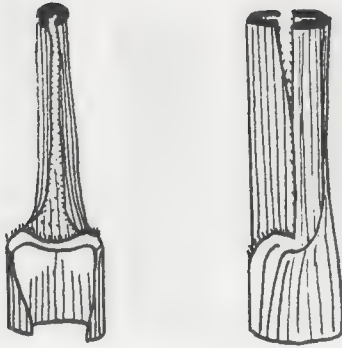
Elymus virginicus L. Virginia Wild Rye, Lyme Grass.

A tall, loosely tufted perennial with no rootstocks, found in moist meadows, ravines, banks and open woods.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins the outer one of which is ciliate; smooth, scabrous or sparsely retrorse-pubescent, light green, sometimes purplish at the base. COLLAR broad, continuous, glabrous, yellowish, often oblique. AURICLES claw-like, sharp, 0.5 to 1.5 mm. long, often absent. LIGULE thick-membranous, greenish or tinged with brown, truncate, wavy, ciliolate. BLADE 4 to 12 mm. wide, 10 to 30 cm. long, flat, tapering to a sharp point, scabrous on both surfaces, distinctly nerved, somewhat keeled below; margins scabrous.

This species may be distinguished from E. canadensis by its narrower blades, shorter ligule, and more scabrous surfaces of blades.

FESTUCA IDAHOENSIS

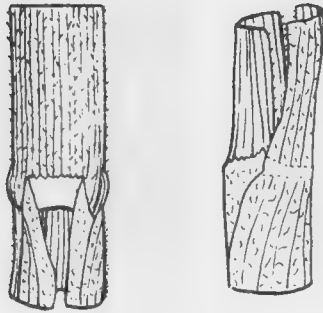


Festuca idahoensis Elmer. Bluebunch Fescue.

An erect, bluish green, fine-leaved, densely tufted perennial without rootstocks, found in open woods and on rocky slopes.

LEAVES folded in bud-shoot. SHEATH flattened, keeled, split only part way down, smooth or scaberulous, basal ones pinkish. COLLAR indistinct. AURICLES absent. LIGULE truncate, ciliate, extremely short. BLADE 1 mm. wide or so, 5 to 25 cm. long, folded, filiform or bristle-like, scabrous, light green; veins indistinct; blades so erect as to appear continuous with sheath.

FESTUCA OCTOFLORA

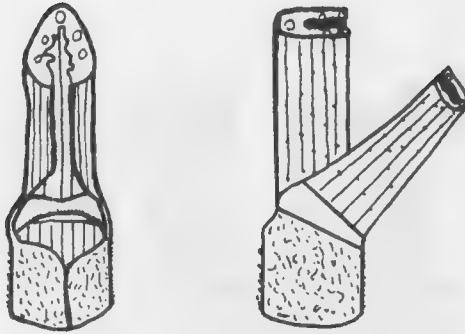


Festuca octoflora Walt. Six-Weeks Fescue.

An erect, dwarf annual, dark green with faint purplish bases, found in dry sandy soil.

LEAVES folded in bud-shoot. SHEATH flattened, keeled, ridged, usually retrosely scabrous or minutely pubescent, split with overlapping scarious margins. COLLAR continuous, narrow, distinct, glabrous, light green. AURICLES absent. LIGULE membranous, truncate, lacerate, ciliate. BLADE less than 2 mm. wide, 2 to 10 cm. long, flat to folded or involute, twisted, filiform, prominently ridged and usually scaberulous below.

FESTUCA OVINA

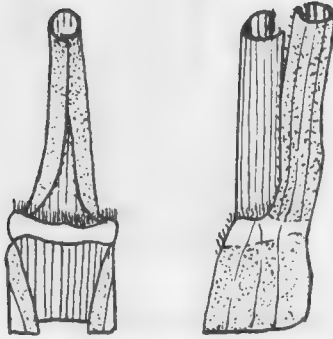


Festuca ovina L. Sheep Fescue.

A very fine-leaved, densely tufted perennial with no rootstocks, found in various types of soil with moderate moisture content, often on poor and sandy soils.

LEAVES folded in bud-shoot. SHEATH round or slightly compressed, split with broad overlapping hyaline margins, glabrous or finely pubescent, bluish green, lower often pinkish at the base, glaucous. COLLAR indistinct, narrow, glabrous, yellowish. AURICLES absent. LIGULE membranous, truncate, very short or obsolete, ciliate. BLADE about 1 mm. wide, 5 to 15 cm. long, bristle-like, permanently folded, bluish green, glaucous, ridged and scabrous on inner surface; usually scabrous on outer surface; margins smooth.

FESTUCA SCABRELLA

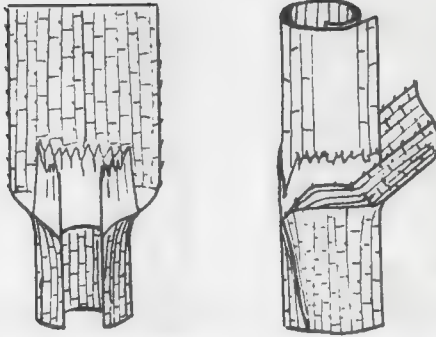


Festuca scabrella Torr. Rough Fescue.

An erect, fine long-leaved, densely tufted perennial without rootstocks, found on prairies, hillsides and dry open woods.

LEAVES folded in bud-shoot. SHEATH round or slightly compressed, split with broad hyaline margins, smooth or scabrous. COLLAR narrow, indistinct, glabrous, yellowish green. AURICLES absent. LIGULE membranous, truncate, lacerate, ciliate, less than 1 mm. long. BLADE 1 to 4 mm. wide, up to 50 cm. long, bristle-like, permanently folded, ridged and scabrous on the inner surface; scabrous on outer surface; margins scabrous.

FLUMINIA FESTUCACEA

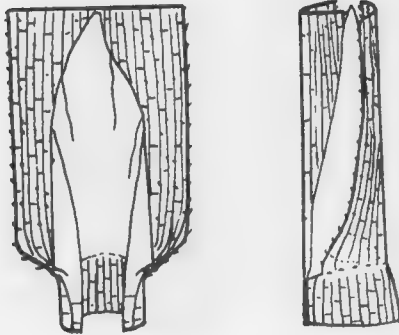


Fluminia festucacea (Willd.) Hitchc. Spangle
Top. Thatch grass.

A tall, erect, aquatic perennial with stout rootstocks, found in sloughs and along water courses.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, prominently veined, smooth. COLLAR divided or continuous, glabrous, yellowish or brownish green. AURICLES absent. LIGULE membranous, truncate, lacerate, 2 to 8 mm. long. BLADE 3 to 10 mm. wide, 10 to 35 cm. long, flat to convolute, ridged and slightly scabrous above, glabrous and faintly nerved below, tapering to a fine point, light or yellowish green; margins narrowly scarious and scabrous.

GLYCERIA BOREALIS

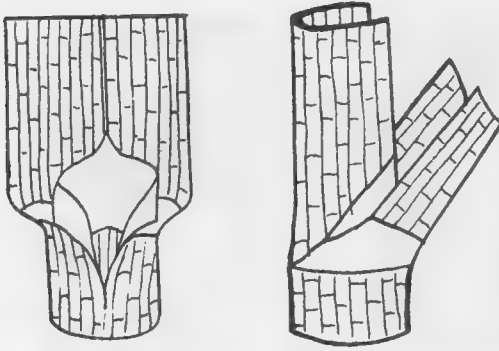


Glyceria borealis (Nash.) Batchelder. Northern
Manna-grass.

An erect or decumbent perennial with root-stocks, found in wet or marshy places.

LEAVES folded in bud-shoot. SHEATH compressed, keeled, closed in young shoots, split with hyaline margins in older ones, smooth. COLLAR divided, narrow, often oblique, light or yellowish green. AURICLES absent. LIGULE membranous, acute, soon becoming frayed, up to 12 mm. long. BLADE 2 to 10 mm. wide, 10 to 25 cm. long, flat to folded, scabrous on upper surface and margins, keeled and scabrous below, light or yellowish green.

GLYCERIA GRANDIS



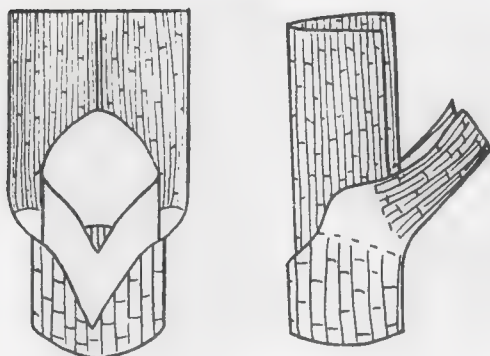
Glyceria grandis S. Wats. Tall Manna Grass.

A tall, stout, erect, glabrous perennial with few rootstocks, found in wet soil along stream banks, ditches and marshes.

LEAVES folded in bud-shoot. SHEATH compressed and keeled, closed to near the top but rupturing easily, smooth or slightly scabrous, pale or yellowish green, striate and cross-veined. COLLAR conspicuous, divided, pale green or yellowish brown. AURICLES absent. LIGULE membranous, truncate to abruptly acuminate, entire or slightly undulate. BLADE 5 to 15 mm. wide, 10 to 40 cm. long, flat or V-shaped, tapering to a boat-shaped tip, glabrous above and below, slightly scabrous on margins, prominently but finely veined below, with white midvein; veination on upper surface with cross-veins.

This grass is yellowish green, coarse, with rather firm leaves possessing cross-veins on both blade and sheath.

GLYCERIA STRIATA



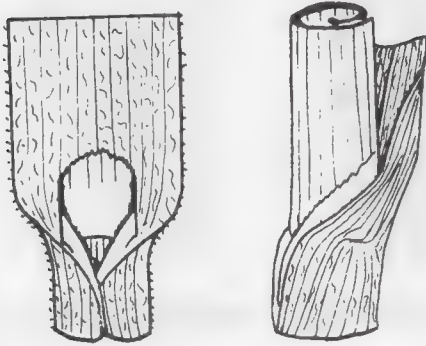
Glyceria striata (Lamb.) Hitchc. Fowl Manna Grass.

An erect, loosely tufted perennial with short rootstocks, found in wet meadows and moist woods.

LEAVES folded in bud-shoot. SHEATH slightly flattened, somewhat keeled, closed to near the top, smooth or slightly scabrous, pale green or purplish tinged at the base, finely nerved and cross-nerved. COLLAR divided or continuous, indistinct, pale green, glabrous. AURICLES absent. LIGULE membranous, obtuse or acute, entire or lacerate, 2 to 5 mm. long. BLADE 2 to 6 mm. wide, 6 to 30 cm. long, flat or V-shaped, tapering to a sharp boat-shaped tip, pale green, glabrous above and below, scabrous on margins, thin, soft, finely veined and cross-nerved.

This species is distinguished from Glyceria grandis by its narrower leaves, purplish tinged sheaths and less conspicuous cross-nerves on blades.

HIEROCHLOE ODORATA

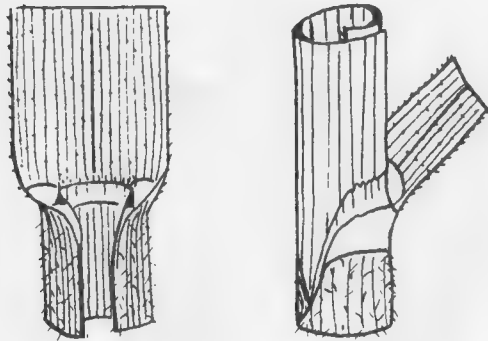


Hierochloë odorata (L.) Beauv. Sweetgrass.

An erect, sweet-smelling, sod-forming perennial with extensive rootstocks, found on moist prairies and on abandoned lands.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, purplish at the base in young shoots, prominently veined, smooth or slightly scabrous. COLLAR narrow, divided, light green, glabrous. AURICLES absent. LIGULE membranous, obtuse, toothed, lacerate, sometimes ciliate, 1 to 3 mm. long. BLADE 2 to 8 mm. wide, 2 to 20 cm. long, flat to convolute, tapering to an obtuse point, scabrous or smooth on either surfaces, dark green, with fine prominent nerves on both sides, and white midrib below; margins scabrous.

HORDEUM JUBATUM

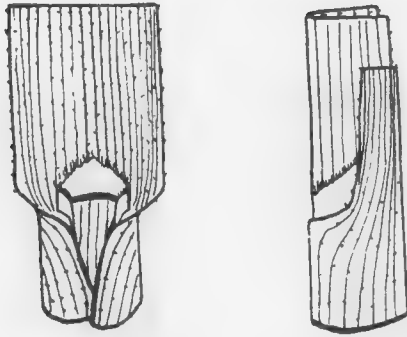


Hordeum jubatum L. Wild Barley.

An erect, fine-leaved, densely tufted perennial without rootstocks, found in waste places, meadows, and moist slightly alkaline soils.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, distinctly veined, glaucous, glabrous or lower ones pubescent. COLLAR medium broad, continuous, glabrous, pale green, often purplish, sometimes oblique. AURICLES absent or rudimentary. LIGULE membranous, obtuse or truncate, lacerate, finely ciliate, about 1 mm. long. BLADE 2 to 6 mm. wide, 5 to 15 cm. long, flat or U-shaped, tapering to a sharp point, twisted, prominently veined, scabrous and usually villose above, densely puberulent or scabrous below, rarely smooth, light bluish green; margins scabrous.

KOELERIA CRISTATA

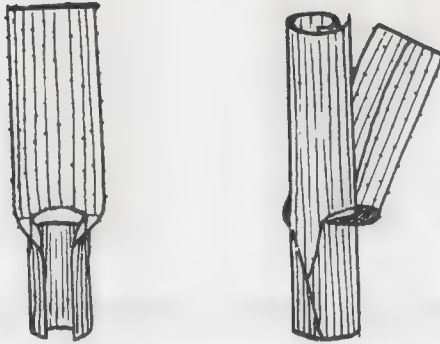


Koeleria cristata Pers. Junegrass.

A low, erect, tufted perennial without root-stocks, found on dry hills and plains associated with Stipa comata and Bouteloua gracilis.

LEAVES folded in bud-shoot. SHEATH round, split with scarious margins, scabrous and often pubescent, distinctly veined, pale green. COLLAR medium broad, continuous or divided, yellowish green, smooth or hairy on edges. AURICLES absent. LIGULE membranous, truncate to obtuse, often split, usually ciliate, up to 1 mm. long. BLADE 1 to 4 mm. wide, 5 to 12 cm. long, tapering to a blunt tip, flat to involute, bluish green, stiff, ridged and scabrous above, keeled and usually smooth underneath, may be glabrous or pubescent on either surface; margins narrowly scarious and scabrous.

LOLIUM RIGIDUM

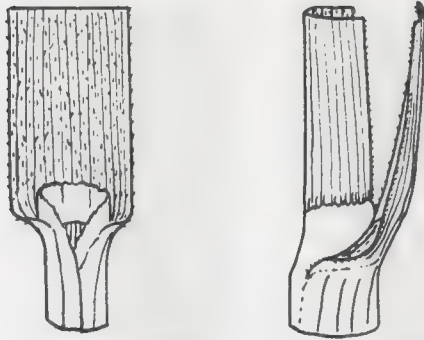


Lolium rigidum Gaudin. Darnel.

An erect, bluish-green annual found in grain fields.

LEAVES rolled in bud-shoot. SHEATH round or slightly flattened, split with overlapping hyaline margins, prominently veined, keeled, glabrous. COLLAR often indistinct, divided, sometimes oblique, yellowish or brown. AURICLES claw-like, slender, very often absent. LIGULE membranous, brownish, truncate to rounded, lacerate, about 1 mm. long or less. BLADE 2 to 6 mm. wide, 5 to 15 cm. long, flat to convolute, tapering to a sharp point, twisted, ridged and scabrous above, distinctly veined and smooth or slightly scabrous below; margins lightly scabrous.

MUHLENBERGIA ASPERIFOLIA

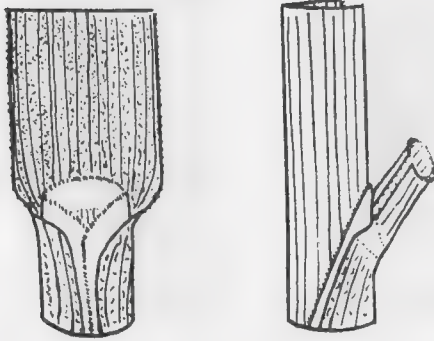


Muhlenbergia asperifolia (Nees and Mey.) Parodi.
Scratch Grass.

A low, erect, tufted perennial with slender, scaly rootstocks, pale green or glaucous, found in damp often alkaline soils.

LEAVES folded in bud-shoot. SHEATH flattened, keeled, split with hyaline margins, glabrous, medium green, prominently veined. COLLAR distinct, divided by prominent midvein which extends part way down the sheath. AURICLES absent. LIGULE minute 0.5 to 1 mm. long, lacerate, truncate. BLADE 1 to 2 mm. wide, 2 to 5 cm. long, flat, upper surface very scabrous; lower surface smooth, midrib prominent; margins scabrous.

MUHLENBERGIA CUSPIDATA

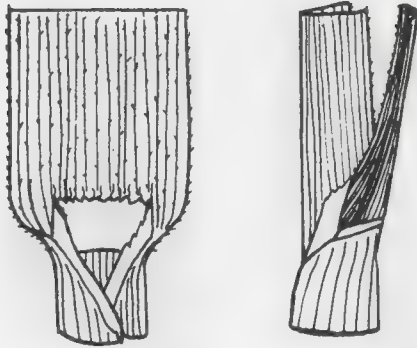


Muhlenbergia cuspidata (Torr.) Rydb. Prairie
Muhly.

. An erect, fine-leaved, densely tufted perennial with hard, bulb-like, scaly, bases, and no rootstocks, found on dry slopes and prairies.

LEAVES folded in bud-shoot. SHEATH slightly flattened, very short, split with overlapping margins, glabrous or slightly puberulent. COLLAR broad, continuous, light yellow. AURICLES absent. LIGULE membranous, truncate or rounded, lacerate, ciliate, up to 1 mm. long. BLADE 1 to 3 mm. wide, 3 to 10 cm. long, flat to folded, tapering to a fine point, prominently veined and hirtellous above, glabrous with prominent midvein below; margins scabrous and scarious.

MUHLENBERGIA RACEMOSA

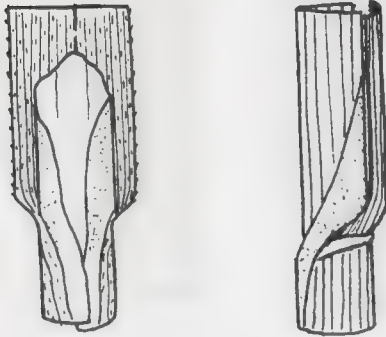


Muhlenbergia racemosa (Michx.) B.S.P. Marsh
Muhly.

An erect, dark green, perennial with stout, scaly rootstocks, found in moist meadows, low areas and sandhills.

LEAVES folded in bud-shoot. SHEATH flattened, keeled, split with hyaline margins, distinctly veined, smooth or scabrous. COLLAR continuous, narrow, yellowish or brownish green. AURICLES absent. LIGULE membranous, truncate to rounded, lacerate, about 1 mm. long. BLADE 2 to 6 mm. wide, 5 to 15 cm. long, flat to folded, abruptly tapering to a sharp point, dark green, scabrous on both surfaces; veins not prominent; midvein prominent below; margins scarious and scabrous.

MUHLENBERGIA SQUARROSA

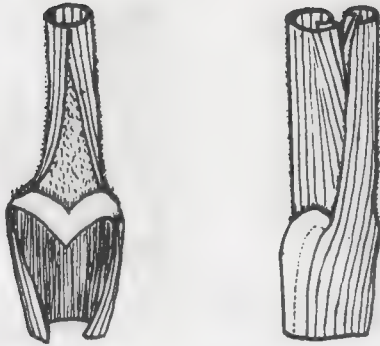


Muhlenbergia squarrosa (Trin.) Rydb. Mat Muhly.

A low, erect, tufted perennial, with extensive scaly rootstocks, stems fine, wiry, many jointed, with large ligules, found on dry or moist prairie and alkaline soils.

LEAVES folded in bud-shoot. SHEATH round, split, smooth, medium green. COLLAR distinct up to 1 mm. wide, greenish white. AURICLES absent. LIGULE membranous, 1 to 3 mm. long, obtuse to acute, entire, sometimes lacerate at tip. BLADE 1 to 2 mm. wide, up to 10 cm. long, flat or involute; upper surface finely striate, slightly scabrous; lower surface smooth, midrib prominent; margins scabrous.

ORYZOPSIS ASPERIFOLIA

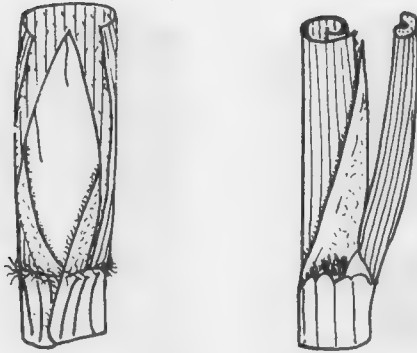


Oryzopsis asperifolia Michx. White-grained Mountain-Rice.

An erect, long-leaved, tufted perennial with very short rootstocks and purplish basal sheaths, found on wooded slopes and moist hillsides.

LEAVES rolled in bud-shoot. SHEATH rather short, round, split, slightly overlapping, smooth or scaberulous, dark purple at the base. COLLAR very narrow, continuous, light green, often indistinct, lacerate, less than 1 mm. long, ciliate. BLADE two distinct types, some only 1 cm. long others up to 40 cm. long, all 3 to 10 mm. wide, flat to convolute, erect, tapering at each end; surfaces smooth or slightly scabrous, distinctly veined above; margins very scabrous.

ORYZOPSIS HYMENOIDES

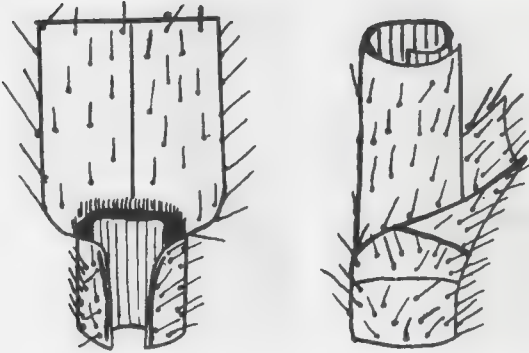


Oryzopsis hymenoides (R. and S.) Ricker. Indian Rice.

A light green, long-leaved, tufted perennial with no rootstocks, found in sandy places.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, very prominently veined, smooth or slightly scabrous; outer margin often fringed with hairs. COLLAR indistinct, narrow, yellowish, often with small tufts of hairs at the margins. AURICLES absent. LIGULE membranous, acute, often split, very conspicuous, 2 to 8 mm. long. BLADE 2 to 5 mm. wide, up to 50 cm. long, involute, seldom flat, long tapering, coriaceous, coarsely ridged and scabrous above, prominently veined and smooth below.

PANICUM CAPILLARE

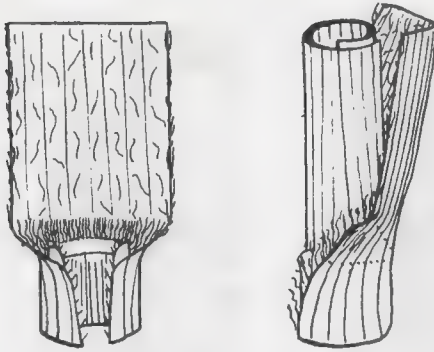


Panicum capillare L. Witchgrass.

A coarse and very hairy, branching annual found in fields and waste places.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, prominently veined, dull green, often purple tinged, conspicuously papillose-hispid. COLLAR usually broad, continuous, often indistinct, yellowish green, pubescent. AURICLES absent. LIGULE a dense fringe of hairs 1 to 2 mm. long, fused at the base. BLADE 5 to 15 mm. wide, 8 to 25 cm. long, hispid on both surfaces, distinctly veined below, less so above, flat, tapering to a sharp point, soft, keeled at the base; margins scabrous, papillose-ciliate towards the base.

PANICUM VIRGATUM

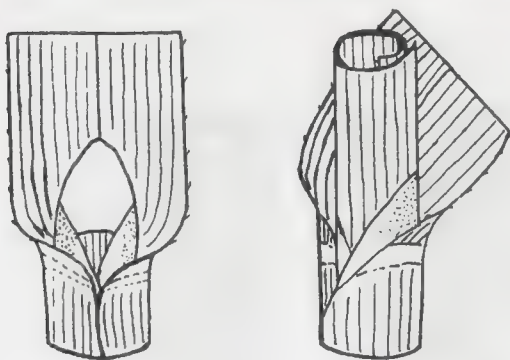


Panicum virgatum L. Switchgrass.

An erect, glaucous green, perennial with large scaly rootstocks, found on low prairie and in open woods, associated with Sorghastrum nutans and Elymus canadensis.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious and villose margins, glabrous, prominently veined, white to purplish tinged below. COLLAR broad, continuous, yellowish, pubescent on the margins. AURICLES absent. LIGULE a fringe of hairs fused at the base, 1 to 3 mm. long. BLADE 4 to 12 mm. wide, 10 to 50 cm. long, flat, tapering to a sharp point, constricted at the base, distinctly veined, with prominent mid-vein, usually glabrous on both surfaces except at the base on the upper surface where long pubescence is to be found; margins scarious and scabrous.

PHALARIS ARUNDINACEA

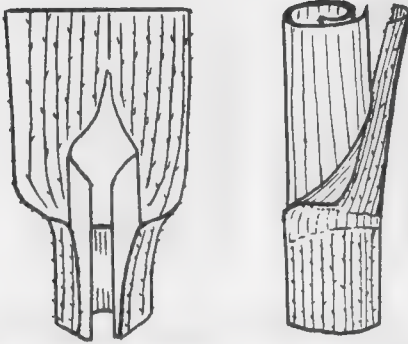


Phalaris arundinacea L. Reed Canary Grass.

A tall, stout, erect perennial with long scaly, pinkish rootstocks, found in soils of high moisture content. Under cultivation it is used for areas where water stands a long time; it is fairly drought resistant, hence a valuable meadow grass.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, glabrous, light or yellowish green, distinctly veined, with cross-nerves, pinkish at the base. COLLAR divided, or narrowed at the midrib if continuous, glabrous, yellowish green, usually oblique. AURICLES absent. LIGULE membranous, white, minutely pubescent on the back, acute or obtuse, entire, lacerate or split, 2 to 5 mm. long. BLADE 6 to 15 mm. wide, 10 to 30 cm. long, flat, tapering to a sharp point, light green, glaucous, finely veined and smooth or slightly scabrous on both surfaces, midrib prominent below; margins scabrous.

PHALARIS CANARIENSIS

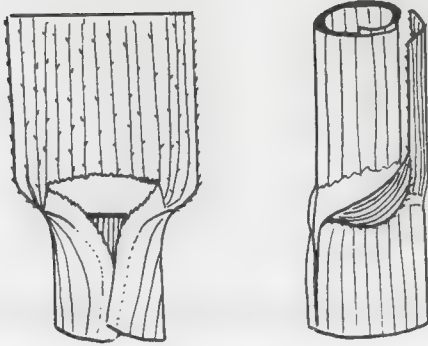


Phalaris canariensis L. Canary Grass.

An erect annual found in gardens and waste places.

LEAVES rolled in flattened bud-shoot. SHEATH round or flattened, split with overlapping hyaline margins, prominently veined, scabrous. COLLAR narrow, continuous, often indistinct, light or yellowish green, arch-like. AURICLES absent. LIGULE membranous, acute or obtuse, lacerate, up to 8 mm. long. BLADE 4 to 12 mm. wide, 5 to 30 cm. long, flat, tapering to a sharp point, twisted near the apex, scabrous on both surfaces, finely nerved, midrib prominent below extending part way down the sheath; margins scarious and slightly scabrous.

PHLEUM ALPINUM

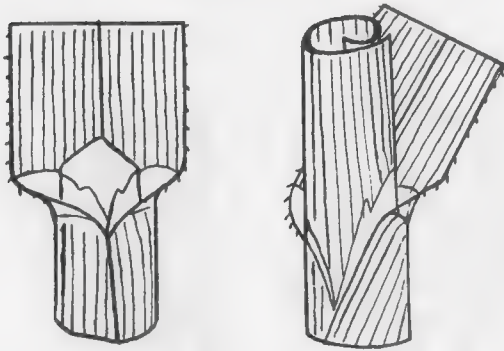


Phleum alpinum L. Alpine Timothy.

An erect or decumbent, densely tufted perennial with a few creeping rootstocks, found in mountain meadows and wet places.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, inflated about the middle, prominently veined, glabrous, light green, often purplish at the base. COLLAR narrow, often oblique, continuous or divided, distinct, light or yellowish green. AURICLES absent. LIGULE membranous, truncate or obtuse, usually notched on one side, rarely lacerate, 2 to 4 mm. long. BLADE 3 to 8 mm. wide, 2 to 15 cm. long, flat, tapering, usually short, finely veined above, with prominent midvein below, scabrous on upper surface and margins, smooth or scaberulous below.

PHLEUM PRATENSE

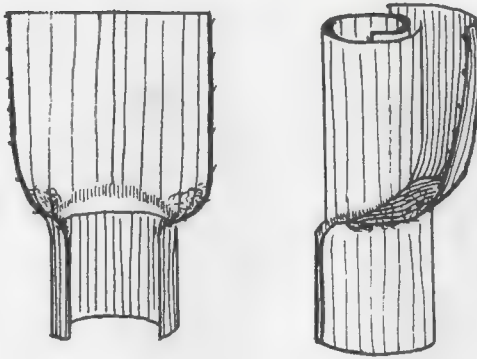


Phleum pratense L. Timothy.

An erect, tufted perennial with the bases of stems swollen into corms, found in moist soils.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping hyaline margins, distinctly veined, glabrous, light green, often purplish at the base. COLLAR medium broad, continuous, light or yellowish green, sometimes oblique, margins sparsely retrorse-ciliate. AURICLES absent. LIGULE membranous, obtuse or acute, distinctly notched on either side, otherwise entire or slightly lacerate. BLADE 4 to 12 mm. wide, 5 to 25 cm. long, flat, tapering to a sharp point, distinctly veined, smooth or scaberulous on both surfaces, twisted, erect, light green, glaucous; scarious margins scabrous, retrorsely so at the base.

PHRAGMITES COMMUNIS

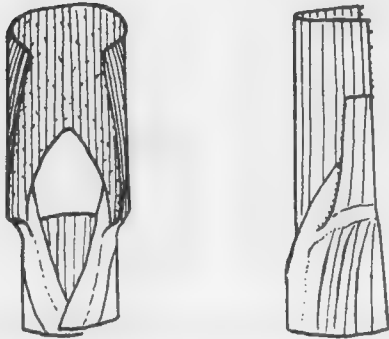


Phragmites communis Trin. Canegrass.

The largest of our native grasses a very stout, erect, perennial with stout creeping root-stocks, found on lake shores and marshy places.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, glabrous, not prominently veined, light yellowish green or basal portion purplish. COLLAR broad, continuous, glabrous, yellowish and usually brown on the margins. AURICLES absent or rudimentary. LIGULE thick, brown, truncate, lacerate, long ciliate, pubescent on the back, about 1 mm. long. BLADE 1 to 3 cm. wide, 15 to 40 cm. long, tapering to a sharp point, narrowed at the base, glabrous above and below; margins scarious and scabrous; veins fine and not very prominent.

POA ARIDA

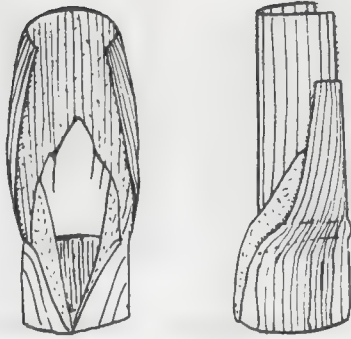


Poa arida Vasey. Plains Bluegrass.

An erect, usually short, sod-forming perennial with creeping rootstocks, found on prairies and meadows.

LEAVES folded in bud-shoot. SHEATH compressed, keeled, split with overlapping hyaline margins, prominently veined, smooth or scabrous, light bluish green. COLLAR divided, yellowish or light green, often indistinct. AURICLES absent. LIGULE membranous, acute, entire, 1 to 3 mm. long. BLADE 2 to 3 mm. wide, 2 to 20 cm. long, usually folded, firm, scabrous on upper surface and margins, smooth or slightly scabrous below, distinctly veined, light bluish green.

POA CANBYI

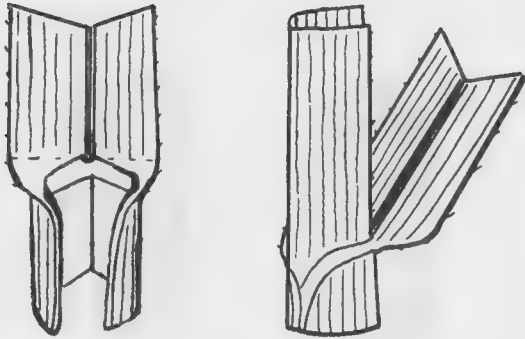


Poa Canbyi (Scribn.) Piper. Canby's Bluegrass.

An erect, green or glaucous, tufted perennial found on dry prairies, hillsides and often on saline flats.

LEAVES folded in bud-shoot. SHEATH compressed, keeled above, split with hyaline margins, scabrous, light or yellowish green at the base. COLLAR divided or continuous, pale or yellowish green, often indistinct. AURICLES absent. LIGULE membranous, acute, entire, 2 to 5 mm. long. BLADE 1 to 4 mm. wide, 4 to 20 cm. long, flat to folded, linear, boat-shaped at the tip, scabrous on upper surface with scarious margins; smooth and prominently veined below.

POA COMPRESSA

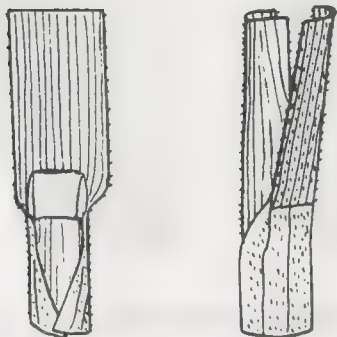


Poa compressa L. Canada Bluegrass.

An erect or decumbent, bluish-green, flat-stemmed, sod-forming perennial with creeping rootstocks, found on poor soils in meadows, pastures and waste places.

LEAVES folded in bud-shoot. SHEATH strongly compressed and sharply keeled, split with hyaline margins, glabrous, green or purplish tinged at the base. COLLAR divided, narrow, glabrous, light or yellowish green. AURICLES absent. LIGULE membranous, truncate or emarginate, entire, 1 to 2 mm. long. BLADE 2 to 5 mm. wide, 2 to 15 cm. long, flat to folded, tapering to a sharply pointed boat-shaped tip, keeled below, broadest at the base, bluish-green, smooth or scabrous; veins not very prominent; margins scarious and scabrous.

POA CUSICKII

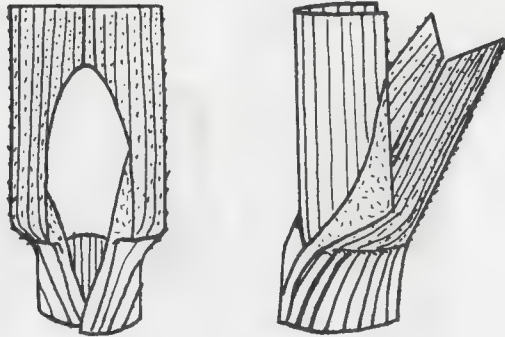


Poa Cusickii Vasey. Cusick's Bluegrass.

An erect, bluish green, tufted perennial without rootstocks, found on prairies and dry slopes.

LEAVES folded in bud-shoot. SHEATH compressed, sharply keeled, split with overlapping hyaline margins, ridged, scabrous or smooth. COLLAR indistinct, very narrow, pale green and divided if evident. AURICLES absent. LIGULE membranous, truncate, entire or slightly lacerate, very short, less than 1 mm. long. BLADE 2 to 4 mm. wide, 5 to 15 cm. long, usually folded and almost bristle-like, sharp-pointed at the tip, keeled, scabrous on margins, and scabrous or smooth on surfaces, ridged on outer surface with two prominent white veins like the midrib which continue down the sheath.

POA GLAUCIFOLIA

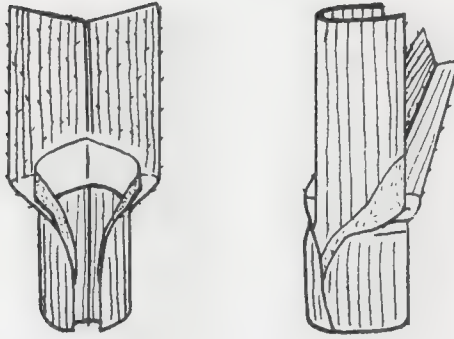


Poa glaucifolia Scribn. and Will. Glaucous Bluegrass.

An erect, glaucous, loosely tufted perennial with few, very slender rootstocks, found in moist places and open woods.

LEAVES folded in bud-shoot. SHEATH slightly flattened, split, with hyaline margins, distinctly veined and somewhat keeled above, glabrous, often purplish at the base. COLLAR continuous or divided, light or yellowish green, often indistinct in younger shoots. AURICLES absent. LIGULE membranous, acute, entire, 1 to 3 mm. long. BLADE 2 to 4 mm. wide, 5 to 20 cm. long, flat to folded, glabrous and glaucous above and below, distinctly veined and prominently midribbed on the lower surface; margins very scarious and scaberulous.

POA PALUSTRIS

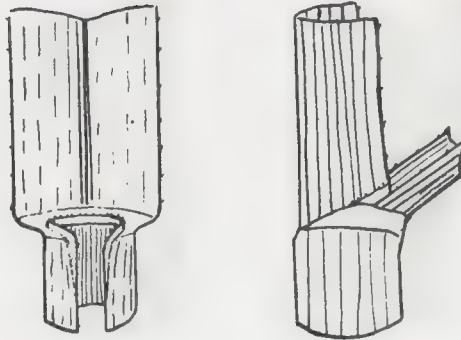


Poa palustris L. Fowl Meadowgrass. Fowl Bluegrass.

An erect or decumbent, loosely tufted perennial, with short rootstocks, found in moist meadows, ditches and along streams.

LEAVES folded in bud-shoot. SHEATH flattened and keeled, split with overlapping hyaline margins, distinctly veined, smooth or slightly scabrous, pale green or purplish tinged at the base. COLLAR distinct, divided, pale green, glabrous. AURICLES absent. LIGULE membranous, acute, entire or lacerate, 1 to 3.5 mm. long. BLADE 2 to 4 mm. wide, 7 to 15 cm. long, flat or V-shaped, broad at the base, tapering to a sharp point, scabrous on scarious margins and on both surfaces; midvein and two lateral veins evident on lower surface.

POA PRATENSIS



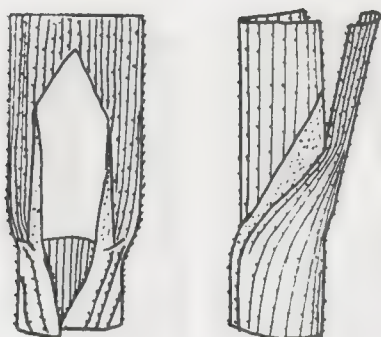
Poa pratensis L. Kentucky Bluegrass.

An erect, slender, dark green perennial with long, creeping rootstocks forming a dense sod, found in pastures, meadows, lawns and roadsides, thriving best in good soils of moderate moisture content.

LEAVES folded in bud-shoot. SHEATH compressed but not sharply keeled, split with hyaline margins, distinctly veined, glabrous. COLLAR narrow, continuous, yellowish green, sometimes indistinct. AURICLES absent. LIGULE membranous, truncate, entire, finely ciliate, puberulent on the back, very short, less than 1 mm. long. BLADE 2 to 5 mm. wide, 5 to 40 cm. long, linear with boat-shaped tip, flat to folded, keeled, distinctly veined, smooth or scabrous on both surfaces, lower one usually smooth; margins slightly scabrous.

This grass can be distinguished from P. compressa by its deeper green foliage, longer and parallel-sided blades and shorter ligule.

POA SCABRELLA

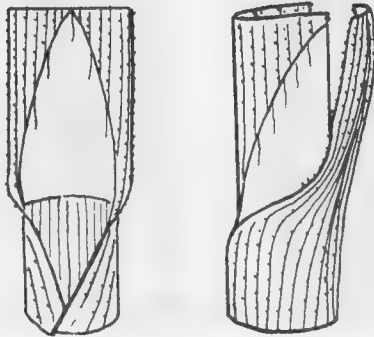


Poa scabrella (Thurb.) Benth. Rough Blue-grass.

An erect, light green, tufted perennial without rootstocks, found in meadows and open woods.

LEAVES folded in bud-shoot. SHEATH round, split, with scarious margins, prominently veined, scabrous. COLLAR divided, light green, usually inconspicuous. AURICLES absent. LIGULE membranous, acute, lacerate, sometimes sparsely ciliate, 1 to 3 mm. long. BLADE 1 to 2 mm. wide, 5 to 20 cm. long, flat to folded or involute, distinctly veined and very scabrous above and less so below, light green; scarious margins scabrous.

POA SECUNDA

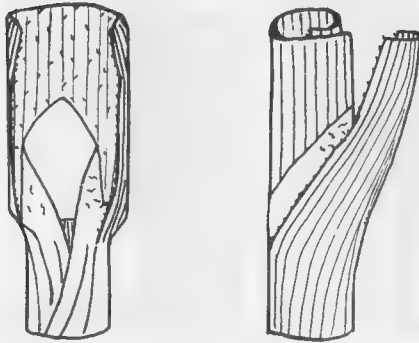


Poa secunda Presl. Sandberg Bluegrass.

A low, erect, densely and extensively tufted perennial found on dry prairies, rocky slopes and gumbo flats.

LEAVES folded in bud-shoot. SHEATH compressed, split with overlapping hyaline margins, smooth or slightly scabrous, prominently veined, pale or purplish at the base. COLLAR indistinct, divided, narrow, light green. AURICLES absent. LIGULE membranous, acute, entire or lacerate, 1 to 3 mm. long. BLADE 1 to 2 mm. wide, 4 to 12 cm. long, flat to folded, twisted, prominently veined, scabrous on both surfaces and margins.

PUCCINELLIA NUTTALLIANA

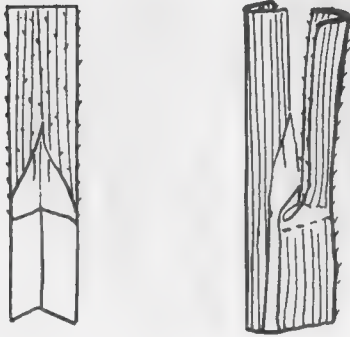


Puccinellia Nuttalliana (Schultes) Hitchc.
Nuttall's Alkali Grass.

An erect to spreading, bluish, dull green, tufted perennial, growing in wet alkaline soils.

LEAVES rolled in bud-shoot. SHEATH round, split; margins overlapping, scarious, smooth. COLLAR not well defined up to 1 mm. wide. AURICLES absent. LIGULE membranous, up to 5 mm. long, acute to obtuse, continuous with margins of sheath. BLADE 1 to 3 mm. wide, 5 to 18 cm. long, flat or involute, veining not prominent, glaucous, very scabrous above, smooth below; margins slightly scabrous.

SCHEDONNARDUS PANICULATUS

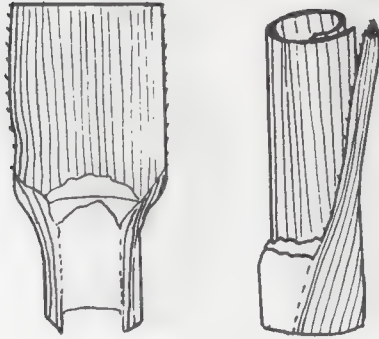


Schedonnardus paniculatus (Nutt.) Trel. Tumble-grass.

A low, fine, wavy-leaved, densely tufted perennial without rootstocks, found on dry prairies and gravelly places.

LEAVES folded in bud-shoot. SHEATH compressed, sharply keeled, split with broad hyaline margins, distinctly veined, very short, usually glabrous. COLLAR divided, narrow, whitish. AURICLES absent. LIGULE membranous, acute, very conspicuous and continuous with the broad sheath margins. BLADE 1 to 2 mm. wide, 2 to 5 cm. usually folded, twisted and wavy, scabrous on scarious margins and midrib, scabrous above, smooth below, light bluish green.

SCHIZACHNE PURPURASCENS

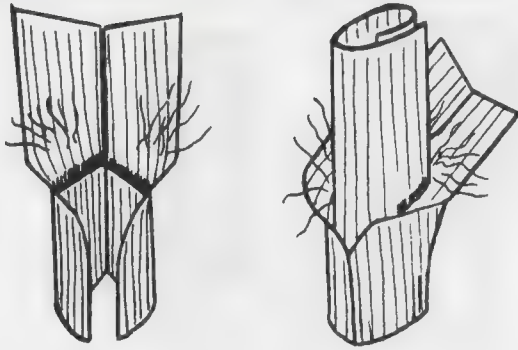


Schizachne purpurascens (Torr.) Swallen.
Purple Oatgrass.

A dark green perennial with rootstocks, growing erect from a loosely tufted decumbent base; found in moist and rocky woods.

LEAVES rolled in a flattened bud-shoot. SHEATH round or slightly flattened, closed in early stages but splitting first in the middle with maturity, purplish at the base, smooth or scaberulous. COLLAR indistinct, narrow, continuous, light green. AURICLES absent. LIGULE membranous, truncate, lacerate, less than 1 mm. long. BLADE 1 to 6 mm. wide, 2 to 20 cm. long, flat to folded, tapering to a sharp point, narrowed at the base, dark green, distinctly veined and scaberulous below, smooth or scaberulous on upper surface and margins.

SETARIA LUTESCENS

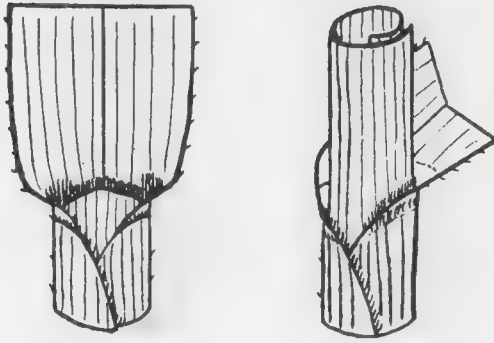


Setaria lutescens (Weigel) Hubb. Yellow Foxtail

An erect or decumbent, glaucous annual found in waste places or cultivated ground.

LEAVES rolled in a flattened bud-shoot. SHEATH compressed, sharply keeled, split with overlapping hyaline margins, distinctly veined, glabrous, pale green and sometimes tinged with purple at the base. COLLAR continuous, smooth, yellowish green, reddish or purple. AURICLES absent. LIGULE a fringe of hairs fused at the base, up to 1 mm. long. BLADE 4 to 12 mm. wide, 5 to 25 cm. long, flat or V-shaped, tapering to a sharp tip, twisted, soft, drooping, glaucous, green, distinctly veined, prominently midribbed below, slightly scabrous or smooth on both surfaces with long, twisted hairs near the base on the upper surface; margins smooth or scabrous.

SETARIA VIRIDIS

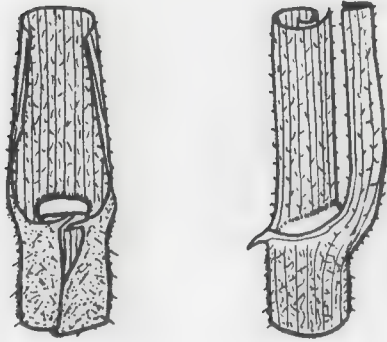


Setaria viridis (L.) Beauv. Green Foxtail.

A coarse, semi-erect annual branching at the base, found as a weed in waste places and cultivated soil.

LEAVES rolled in flattened bud-shoot. SHEATH slightly compressed, split with overlapping margins, (inner one hyaline, the outer pubescent) light green or purplish at the base, glabrous or sparsely appressed pubescent. COLLAR continuous, yellowish green or tinged with red, pubescent along the margins. AURICLES absent. LIGULE a fringe of hairs 1 to 2 mm. long, fused at the base, with longer hairs at edges of collar margins. BLADE 4 to 12 mm. wide, 5 to 20 cm. long, flat, tapering to a fine point, light green, nodding, distinctly but finely veined, with prominent midvein below; margins serrulate-scabrous.

SITANION HYSTRIX

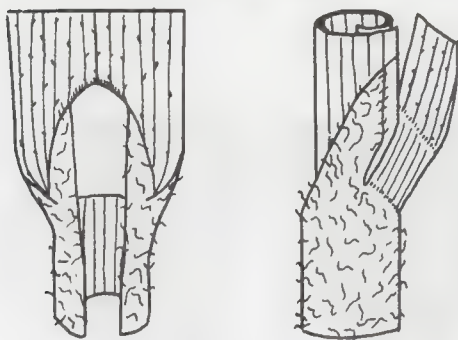


Sitanion Hystrix (Nutt.) J.G. Smith.
Squirreltail.

An erect, rather short, densely tufted perennial without rootstocks, found on dry hills, rocky slopes and river flats in dry areas.

LEAVES rolled in bud-shoot. SHEATH round, split part of the way down, with hyaline margins, somewhat keeled at the upper end, indistinctly veined, glabrous or softly puberulent. COLLAR continuous, light green, glabrous, sometimes indistinct. AURICLES claw-like. LIGULE membranous, truncate, lacerate, or sometimes wavy margined, 1 mm. long or less. BLADE 1 to 3 mm. wide, 2 to 20 cm. long, flat to involute, tapering to a fine point, distinctly veined and finely pubescent on both surfaces; midvein prominent below; narrowly scarious margins scabrous.

SORGHASTRUM NUTANS

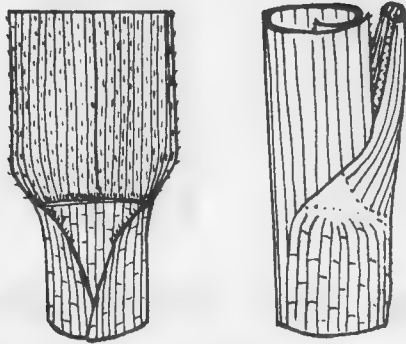


Sorghastrum nutans (L.) Nash. Indian Grass.

An erect perennial with scaly rootstocks, found on sandy or loam soils of moderate moisture content, associated with Andropogon furcatus and Elymus canadensis.

LEAVES rolled in bud-shoot. SHEATH round or compressed near the top, split with hyaline margins, distinctly veined, upper usually glabrous, lower pubescent, often purplish tinged below. COLLAR continuous, glabrous, yellowish. AURICLES absent. LIGULE membranous, obtuse to truncate, lacerate, ciliate, up to 5 mm. long, often pubescent and veined on margins which appear to be projections of the sheath margins. BLADE 4 to 10 mm. wide, 10 to 50 cm. long, flat, narrowed at the base, tapering to a sharp point; veins and midrib prominent; margins and both surfaces scabrous; dull green to glaucous.

SPARTINA GRACILIS

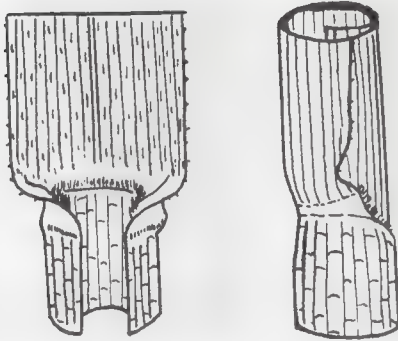


Spartina gracilis Trin. Alkali Cordgrass.

A tall, erect, stiff-leaved perennial with creeping, scaly rootstocks, found on alkaline soils.

LEAVES rolled in bud-shoot. SHEATH round, split with overlapping scarious margins, distinctly veined, glabrous, yellowish green or purplish at the base. COLLAR divided or continuous, broad, yellowish or brownish green, glabrous. AURICLES absent. LIGULE a dense fringe of fine hairs, 1 to 2 mm. long. BLADE 2 to 5 mm. wide, 5 to 40 cm. long, flat to convolute, stiff, coriaceous, tapering to a fine point; upper surface and margins very scabrous, lower surface smooth, not prominently veined.

SPARTINA PECTINATA

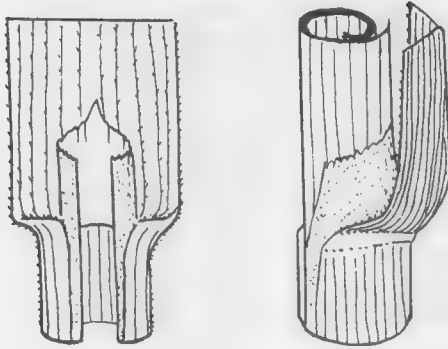


Spartina pectinata Link. Prairie Cordgrass.

A tall, stout perennial with large, scaly rootstocks, found in wet places and near water, often extending into marshes.

LEAVES rolled in bud-shoot. SHEATH round, split with scarious margins, distinctly veined, glabrous, pinkish at the base. COLLAR broad, continuous, glabrous, yellowish or brownish green. AURICLES absent. LIGULE a fringe of hairs appearing membranous at the base, 1 to 4 mm. long. BLADE 5 to 15 mm. wide, 10 to 60 cm. long, flat to involute or convolute, coriaceous, long tapering to a fine point, distinctly veined above and below, very scabrous on margins and upper surface, smooth and glistening underneath, medium to light green, drooping.

SPHENOPHOLIS OBTUSATA

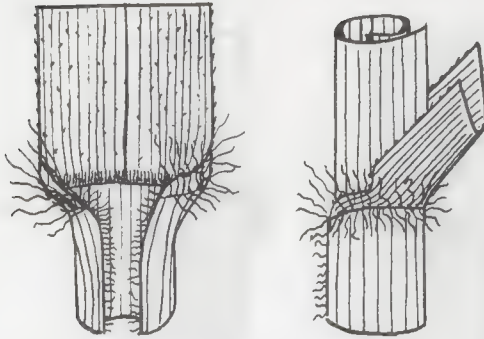


Sphenopholis obtusata (Michx.) Scribn. Prairie Wedgegrass.

. An erect, tufted perennial without rootstock, found in moist ground.

LEAVES rolled in bud-shoot. SHEATH round, split with narrow hyaline margins, distinctly veined, smooth or slightly scabrous. COLLAR narrow, continuous or almost divided, often oblique, light or yellowish green. AURICLES absent. LIGULE membranous, truncate, lacerate, 1 to 4 mm. long. BLADE 2 to 5 mm. wide, 3 to 20 cm. long, flat, scabrous on both surfaces but more so or even pubescent on the upper surface, tapering to a point, thin; margins very scabrous; midvein very fine below.

SPOROBOLUS CRYPTANDRUS

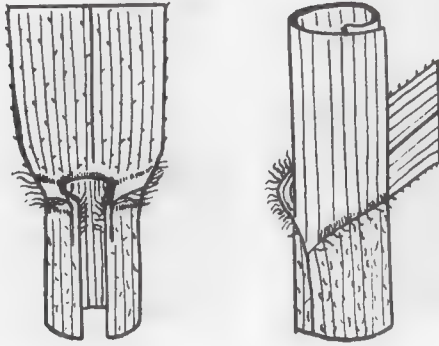


Sporobolus cryptandrus (Torr.) A. Gray. Sand Dropseed.

An erect or decumbent, tufted perennial with very short rootstocks, found on dry or sandy soil, associated with Andropogon spp. and Bouteloua curtipendula, also Oryzopsis hymenoides and Stipa comata.

LEAVES rolled in bud-shoot. SHEATH round, split with hyaline margins, the outer one ciliate; often purple tinged at the base, prominently veined, glabrous. COLLAR broad, continuous, seldom divided, pubescent, yellowish to purplish green. AURICLES absent. LIGULE a dense fringe of very fine silky hairs about 1 mm. long. BLADE 2 to 5 mm. wide, 7 to 20 cm. long, flat to involute or convolute, tapering to a fine point, distinctly veined; scabrous above and on scarious margins, smooth or scaberulous below, light green, fairly stiff.

SPOROBOLUS HETEROLEPIS

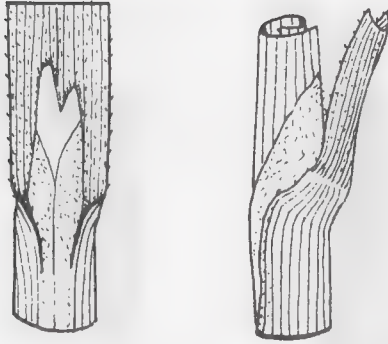


Sporobolus heterolepis A. Gray. Prairie Dropseed

An erect, densely tufted perennial with very short rootstocks and many oppositely arranged scaly straw colored basal leaves, found on dry hills and prairies associated with Andropogon and Stipa spp.

LEAVES rolled in a flattened bud-shoot. SHEATH flattened, split with hyaline margins, distinctly veined, glabrous or pubescent, white or purplish at the base. COLLAR continuous, medium broad, pubescent on the margins, yellowish green. AURICLES absent. LIGULE membranous, truncate, ciliate, very short, less than 0.5 mm. long. BLADE 1 to 3 mm. wide, 5 to 45 cm. long, flat to involute, tapering to a sharp point, distinctly veined, scabrous on margins and upper surface, smooth and distinctly midribbed below, light green, erect or slightly drooping.

STIPA COMATA

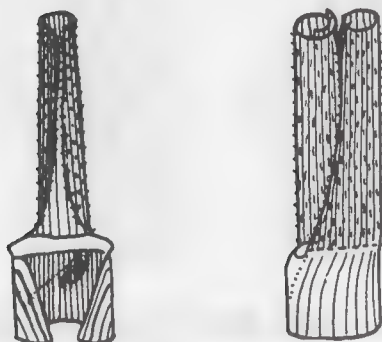


Stipa comata Trin. and Rupr. Speargrass.

An erect, dull green, densely tufted perennial without rootstocks, found on dry hills and prairies.

LEAVES rolled in a slightly flattened bud-shoot. SHEATH round or slightly compressed, split with hyaline margins, prominently veined, glabrous. COLLAR narrow, continuous, light green, often oblique, usually indistinct in younger leaves. AURICLES absent. LIGULE very conspicuous, membranous, obtuse or truncate, up to 4 mm. long, often split or frayed, continuous with sheath margins, sometimes ciliate. BLADE 3 to 8 mm. wide, 5 to 30 cm. long, flat to involute or convolute, younger blades bristle-like, tapering to a sharp point, ridged and scabrous on upper surface and margins, distinctly veined and smooth or scaberulous on lower surface, coriaceous, light green.

STIPA RICHARDSONII

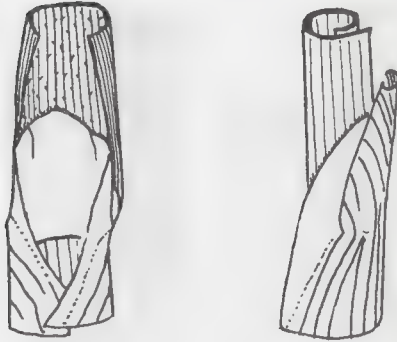


Stipa richardsonii Link. Richardson Needlegrass.

An erect, light bluish green, tufted perennial without rootstocks, found on hillsides and open woods.

LEAVES rolled in a somewhat flattened bud-shoot. SHEATH slightly flattened, split with hyaline margins, distinctly veined, smooth or scabrous. COLLAR indistinct, yellowish, continuous if evident. AURICLES absent. LIGULE membranous, truncate, very short, less than 0.5 mm. long. BLADE 1 to 3 mm. wide, 5 to 25 cm. long, involute and filiform or bristle-like, linear, sharp pointed, usually scabrous on inner surface and narrowly scarious margins, smooth or scabrous on outer surface, light green; veins indistinct on outer surface but prominent on the inner.

STIPA SPARTEA



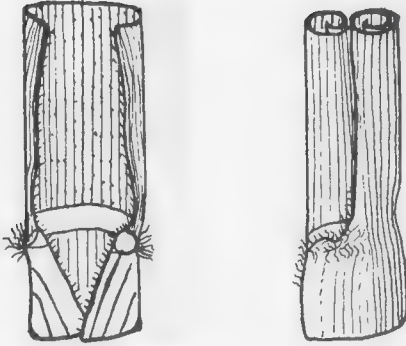
Stipa spartea Trin. Porcupine Grass.

An erect, tufted perennial without root-stocks, found in sandy or loam soils of moderate moisture content, associated with Koeleria cristata and Andropogon scoparius.

LEAVES rolled in a round bud-shoot. SHEATH round, split with hyaline margins the outer of which is usually ciliate, prominently veined, white or purplish at the base. COLLAR continuous, yellowish green, glabrous, often indistinct. AURICLES absent. LIGULE membranous, obtuse or truncate, often split or irregular, finely ciliate, up to 5 mm. long. BLADE 1 to 5 mm. wide, 5 to 40 cm. long, flat to involute or convolute, tapering to a fine point, ridged and scabrous on upper surface, distinctly veined and smooth on lower surface, indistinctly midribbed, coriaceous, light green, glistening, drooping; margins scarious.

A variety of this species S. spartea var curtiseta has much the same growth habit but is less robust. The ligule is about one-half as long, the notch in the center forming two lateral lobes. The variety is more common on the prairies.

STIPA VIRIDULA

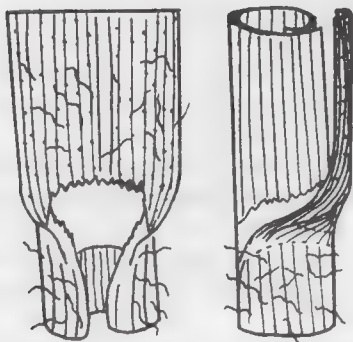


Stipa viridula Trin. Green Needlegrass.

A dark green, erect, tufted perennial without rootstocks, found on dry slopes and prairies.

LEAVES rolled in bud-shoot, sometimes appearing folded. SHEATH round, prominently veined, glabrous, split with scarious overlapping margins the outer one of which is long pubescent, both margins villous near the throat. COLLAR narrow, continuous, yellowish green, hairy all around but more so at the margins. AURICLES absent. LIGULE membranous, obtuse or truncate, entire, 1 to 2 mm. long. BLADE 2 to 5 mm. wide, 10 to 25 cm. long, flat to involute or convolute, prominently veined and scabrous on upper surface and the same to a lesser extent on the lower surface, midrib prominent below; margins scabrous.

TRisetum SPICATUM



Trisetum spicatum (L.) Richt. Spike Trisetum.

An erect, densely tufted perennial without rootstocks, found on mountain meadows and slopes.

LEAVES rolled in bud-shoot. SHEATH round, split only part of the way down, with hyaline margins, keeled at the upper end, indistinctly veined, glabrous or puberulent. COLLAR narrow, continuous, light green, with few long hairs at margins, often indistinct. AURICLES absent. LIGULE membranous, obtuse, lacerate-toothed, up to 2 mm. long. BLADE 2 to 5 mm. wide, 3 to 15 cm. long, flat to involute, tapering to a blunt point, distinctly veined, scaberulous and puberulent above and to a lesser extent below, rarely smooth; mid-rib prominent below; scarious margins scabrous.

GLOSSARY

- ACUMINATE. Tapering to a sharp point, more drawn out than acute.
- ACUTE. Sharp-pointed but less tapering than acuminate.
- ANNUAL. Living but one year, growing each year from seed.
- ASCENDING. Sloping upward.
- AURICLES. Projections at the base of the blade and the upper margins of the sheath.
- BLADE. The expanded portion of the leaf above the sheath.
- CHARTACEOUS. Having the texture of writing paper.
- CILIATE. Fringed with fine hairs on margin.
- CM. Centimeter.
- COLLAR. The area, often ring-like, on the outside of the grass leaf at the juncture of sheath and blade.
- CONVOLUTE. Rolled longitudinally so that one edge is inside and the other outside.
- CORIACEOUS. Leathery in texture.
- CORM. The hard swollen base of the stem.
- DECUMBENT. Curved upward from a horizontal or inclined base.
- DIOECIOUS. The two kinds of flowers on separate plants; unisexual.
- EMARGINATE. Notched at the apex.
- FILIFORM. Very slender, thread-like.
- FLEXUOUS. Bent alternately in opposite directions.
- FOLDED. Conduplicate; said of blades.
- GLABROUS. Without hairs of any sort.
- GLAUCCUS. Covered with a waxy layer which gives a bluish-green color and which rubs off readily.
- HIRSUTE. With straight rather stiff hairs.
- HIRSUTULOUS. Minutely hirsute.
- HYALINE. Thin and translucent.
- INFLATED. Puffed up, bladdery.
- INVOLUTE. Inrolled, both margins rolled inward.
- KEEL. Angle or ridge on back of sheath or blade usually formed by midrib.
- LACERATE. Torn or cut at the edge as though frayed.
- LIGULE. A thin appendage on the inside of leaf at the junction of sheath and blade.

- LINEAR. Long and narrow with parallel sides.
MM. Millimeter.
OBTUSE. Blunt or rounded at the apex.
PERENNIAL. Living more than two years.
PILOSE. Pubescent with soft, fairly long, straight hairs.
PUBERULENT. Minutely pubescent.
PUBESCENT. Covered with rather fine hairs.
RETROSELY. Pointed downward.
ROOTSTOCK. An underground stem.
SCABERULOUS. Slightly scabrous.
SCABROUS. Rough to the touch, due to minute points, teeth or short stiff hairs.
SCARIOUS. Thin, dry, not green, membranous but thicker than hyaline.
SHEATH. The lower part of the leaf that encloses the stem or shoot.
SMOOTH. Free from hairs, bristles or any sort of roughness.
STOLONIFEROUS. With stolons or creeping above ground stems which root at the nodes.
TRUNCATE. Ending abruptly as though chopped off.
VILLOUS. Pubescent with long soft hairs.

ACKNOWLEDGEMENTS

The authors are indebted to Mr. L.B. Thomson, Superintendent of the Dominion Experimental Station, Swift Current, Saskatchewan, and to Mr. W. H. Gibson, Superintendent of the Dominion Experimental Farm, Indian Head, Saskatchewan for providing the facilities required for a detailed study of the grass species and for suggestions offered. They are also indebted to Mr. E.W. Tisdale and Mr. N.A. Skoglund for their contribution in the early stages of the work conducted at the Dominion Range Experiment Station, Manyberries, Alberta.

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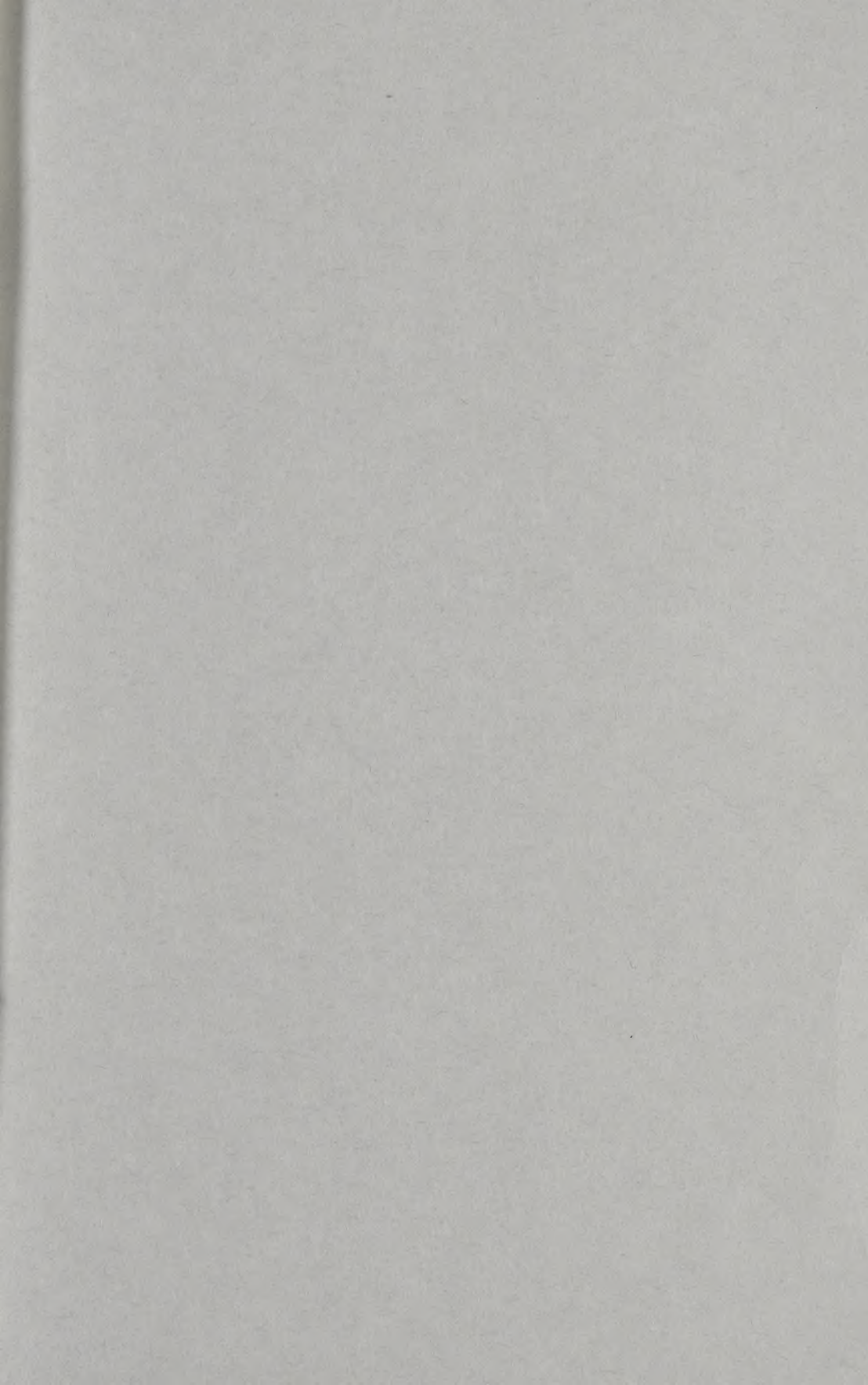
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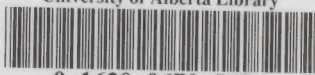
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